

MARS

AGROMETEOROLOGICAL

Crop Monitoring in Europe

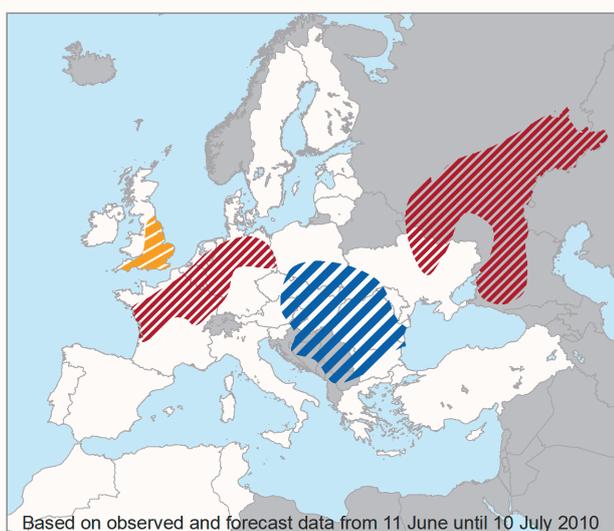
11 June to 10 July 2010

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Crops in western Europe hit hard by unseasonal and abnormally high temperatures. Very wet conditions in eastern Europe.

AREAS OF CONCERN



Based on observed and forecast data from 11 June until 10 July 2010

Dry conditions
 Wet conditions
 Hot and dry conditions

Data source: MARS crop yield forecasting system - 11.07.2010



In general Europe experienced abnormal weather conditions with the exception of Ireland, Sweden and Denmark. Extremely high temperatures with damaging effects on crops were recorded in particular in Russia and Central Europe. In addition, a long dry period was observed since April in the United Kingdom, Benelux, Germany and Poland. Finally, heavy rains causing major flooding occurred in central and eastern Europe (Hungary, Romania) leading to acreage reduction for winter crops and leaching for spring crops.

Given this situation, crops were badly affected and most yields for both winter and spring crops have been revised down from the previous forecast. The revised forecasts at EU27 level are as follows: -0.7% for wheat (total) , -0.4% for barley (total), -2.7% for rapeseed, -1.4% for sugar beet. On the contrary, grain maize yield forecast was revised up to 4.6% at EU27 level.

EU 27 (20 July 2010)					
Crops	Yield t/ha				
	2009	2010	Avg 5yrs	%10/09	%10/5yrs
TOTAL CEREALS	5.1	5.1	4.9	+0.7	+5.0
Total Wheat	5.4	5.3	5.2	-1.5	+2.2
soft wheat	5.7	5.6	5.5	-1.3	+1.7
durum wheat	3.1	3.0	3.0	-3.9	+0.3
Total Barley	4.5	4.4	4.2	-0.5	+4.4
spring barley	3.8	3.8	3.7	+0.4	+4.3
winter barley	5.4	5.3	5.1	-1.2	+3.7
Grain maize	6.9	7.2	6.7	+5.3	+7.7
Other cereals	3.7	3.7	3.3	-0.1	+4.4
Sunflower	1.7	1.8	1.7	+6.0	+7.2
Rapeseed	3.3	3.0	3.1	-8.9	-2.4
Potato	30.0	30.1	28.2	+0.3	+6.8
Sugar beets	71.0	65.6	64.2	-7.5	+2.3

Sources: 2005-2009 data come from EUROSTAT CRONOS and EES (last update: 08/07/2010) ; 2010 yields come from MARS CROP YIELD FORECASTING SYSTEM (up to 10/07/2010); Yields are forecast for crops with more than 10,000 ha per country; figures are rounded to 100 kg.

(1) Sorghum, rye, maslin, oats, triticale, mixed grain other than maslin, millet, buckwheat.

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1. Crop yield forecasts

AGRI4CAST crop yield forecasts at national level for EU-27: 20 JULY 2010

Country	TOTAL WHEAT (t/ha)					SOFT WHEAT (t/ha)					DURUM WHEAT (t/ha)				
	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs
EU27	5.4	5.3	5.2	-1.5	+2.2	5.7	5.6	5.5	-1.3	+1.7	3.1	3.0	3.0	-3.9	+0.3
AT	4.9	5.2	5.1	+4.9	+2.2	5.0	5.2	5.1	+4.6	+2.1	4.0	4.4	4.3	+12.5	+3.9
BE	9.2	8.3	8.5	-9.6	-2.0	9.2	8.3	8.5	-9.6	-2.0	-	-	-	-	-
BG	3.2	3.7	3.2	+14.5	+13.7	3.2	3.7	3.2	+14.5	+13.7	-	-	-	-	-
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CZ	5.2	5.3	5.1	+0.6	+3.4	5.2	5.3	5.1	+0.6	+3.4	-	-	-	-	-
DE	7.8	7.3	7.5	-6.5	-2.7	7.8	7.3	7.5	-6.5	-2.7	5.8	5.3	5.4	-8.6	-1.9
DK	8.1	7.3	7.4	-10.0	-0.6	8.1	7.3	7.4	-10.0	-0.6	-	-	-	-	-
EE	3.0	3.1	3.0	+3.9	+3.7	3.0	3.1	3.0	+3.9	+3.7	-	-	-	-	-
ES	2.7	3.0	2.8	+10.4	+5.7	2.8	3.4	3.1	+21.2	+10.1	2.5	1.9	2.3	-23.9	-15.7
FI	4.1	3.8	3.8	-5.4	+1.9	4.1	3.8	3.8	-5.4	+1.9	-	-	-	-	-
FR	7.5	6.8	6.9	-8.4	-1.2	7.7	7.0	7.1	-8.2	-1.0	5.1	4.7	4.8	-6.6	-0.8
GR	2.6	2.3	2.4	-11.6	-4.3	2.9	2.6	2.7	-9.0	-4.3	2.5	2.2	2.4	-12.6	-6.0
HU	3.8	4.2	4.2	+9.3	+0.1	3.8	4.2	4.2	+9.2	+0.1	3.7	4.1	4.0	+11.4	+1.3
IE	8.6	8.8	8.7	+2.8	+1.2	8.6	8.8	8.7	+2.8	+1.2	-	-	-	-	-
IT	3.5	3.7	3.6	+4.2	+1.2	5.0	5.3	5.2	+5.0	+1.1	2.9	3.0	2.9	+2.9	+1.0
LT	4.2	4.1	3.7	-2.2	+11.1	4.2	4.1	3.7	-2.2	+11.1	-	-	-	-	-
LU	6.6	6.2	6.2	-5.3	+0.9	6.6	6.2	6.2	-5.3	+0.9	-	-	-	-	-
LV	3.6	3.7	3.5	+2.0	+6.0	3.6	3.7	3.5	+2.0	+6.0	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	9.3	8.5	8.5	-8.4	+0.5	9.3	8.5	8.5	-8.4	+0.5	-	-	-	-	-
PL	4.2	4.0	3.9	-3.8	+3.6	4.2	4.0	3.9	-3.8	+3.6	-	-	-	-	-
PT	1.8	1.3	1.8	-27.9	-26.5	1.8	1.3	1.8	-27.9	-26.5	-	-	-	-	-
RO	2.4	3.1	2.6	+31.3	+19.9	2.4	3.1	2.6	+31.3	+19.9	-	-	-	-	-
SE	6.1	5.9	6.1	-3.9	-3.3	6.1	5.9	6.1	-3.9	-3.3	-	-	-	-	-
SI	4.0	4.5	4.3	+13.0	+3.8	4.0	4.5	4.3	+13.0	+3.8	-	-	-	-	-
SK	4.0	4.2	4.2	+4.8	+1.8	4.0	4.2	4.2	+4.8	+1.8	-	-	-	-	-
UK	7.9	7.7	7.9	-1.5	-1.7	7.9	7.7	7.9	-1.5	-1.7	-	-	-	-	-

Country	TOTAL BARLEY (t/ha)					GRAIN MAIZE (t/ha)					PAPE SEED (t/ha)				
	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs
EU27	4.5	4.4	4.2	-0.5	+4.4	6.9	7.2	6.7	+5.3	+7.7	3.3	3.0	3.1	-8.9	-2.4
AT	4.6	4.7	4.6	+1.9	+1.9	10.6	10.6	10.2	-0.4	+3.2	3.0	3.0	3.1	-1.6	-3.3
BE	8.6	8.2	8.1	-4.5	+1.1	11.1	10.4	11.4	-6.2	-8.8	4.4	4.2	4.0	-5.6	+5.2
BG	3.1	3.3	3.0	+7.2	+11.3	4.2	5.2	3.9	+25.3	+33.6	2.2	2.3	2.1	+7.7	+12.9
CY	1.8	1.5	1.1	-15.2	+33.6	-	-	-	-	-	-	-	-	-	-
CZ	4.4	4.4	4.1	+0.2	+6.4	8.4	7.8	7.3	-7.2	+7.4	3.2	3.2	3.0	+1.0	+6.6
DE	6.5	6.1	6.0	-6.2	+2.6	9.8	9.7	9.2	-1.0	+4.4	4.3	3.8	3.8	-11.2	+0.3
DK	5.8	5.2	5.1	-9.7	+1.7	-	-	-	-	-	3.8	3.6	3.5	-5.3	+2.6
EE	2.7	2.5	2.5	-8.2	-1.2	-	-	-	-	-	1.7	1.6	1.6	-2.5	+1.3
ES	2.4	3.1	2.7	+27.1	+15.9	10.1	10.0	9.9	-1.1	+0.5	1.5	1.6	1.6	+8.4	+2.9
FI	3.6	3.7	3.5	+2.1	+4.0	-	-	-	-	-	1.7	1.4	1.4	-18.0	-0.3
FR	6.8	6.3	6.4	-7.3	-0.5	9.1	8.7	8.9	-4.1	-1.9	3.8	3.3	3.3	-12.2	-0.4
GR	2.3	2.4	2.3	+1.8	+1.8	9.8	9.1	9.7	-6.7	-5.6	-	-	-	-	-
HU	3.2	3.7	3.6	+13.8	+0.2	6.4	7.1	6.4	+10.4	+10.5	2.1	2.4	2.3	+13.3	+2.6
IE	6.1	6.8	6.5	+11.5	+3.3	-	-	-	-	-	-	-	-	-	-
IT	3.4	3.6	3.7	+6.3	-1.1	8.6	9.5	9.2	+10.6	+3.9	2.0	1.9	2.0	-8.4	-3.7
LT	3.1	2.9	2.7	-6.9	+8.5	-	-	-	-	-	2.2	2.0	1.8	-7.4	+12.1
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	2.5	2.3	2.3	-7.2	+1.1	-	-	-	-	-	2.2	2.2	2.0	+1.0	+8.0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	6.8	6.1	6.1	-11.5	-0.9	13.0	11.8	11.5	-8.9	+2.6	-	-	-	-	-
PL	3.4	3.2	3.1	-6.8	+3.6	6.2	5.6	5.7	-10.5	-2.2	3.1	2.9	2.8	-6.5	+4.7
PT	1.8	1.6	1.9	-13.2	-13.8	6.8	6.1	5.7	-9.3	+7.6	-	-	-	-	-
RO	2.3	2.8	2.3	+23.6	+23.3	3.4	4.4	3.2	+28.4	+36.6	1.3	1.8	1.5	+36.2	+21.9
SE	4.6	4.4	4.2	-5.7	+3.2	-	-	-	-	-	3.0	2.8	2.7	-8.2	+4.0
SI	3.5	3.9	3.8	+10.6	+3.8	7.8	7.9	7.6	+0.8	+4.2	-	-	-	-	-
SK	3.4	3.5	3.6	+2.2	-1.2	6.8	6.9	6.3	+1.4	+10.3	2.3	2.5	2.3	+6.1	+8.6
UK	5.8	5.9	5.8	+1.7	+1.6	-	-	-	-	-	3.4	3.1	3.3	-6.3	-4.4

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 100 kg
Sources: 2005-2009 data come from EUROSTAT CRONOS and EES (last update: 08/07/2010)
2010 yields come from MARS CROP YIELD FORECASTING SYSTEM (up to 10/07/2010)

AGRI4CAST crop yield forecasts at national level for EU-27: 20 JULY 2010

Country	SUNFLOWER (t/ha)					SUGAR BEERS (t/ha)					POTATO (t/ha)				
	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs
EU27	1.7	1.8	1.7	+6.0	+7.2	71.0	65.6	64.2	-7.5	+2.3	30.0	30.1	28.2	+0.3	+6.8
AT	2.7	2.6	2.6	-4.3	+0.2	70.3	69.1	67.8	-1.8	+1.8	32.5	32.2	31.9	-0.9	+1.0
BE	-	-	-	-	-	73.7	69.5	70.9	-5.7	-2.0	44.9	44.8	43.9	-0.2	+2.1
BG	1.5	1.7	1.5	+10.9	+15.8	-	-	-	-	-	16.3	17.1	15.5	+5.1	+10.6
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CZ	2.4	2.4	2.3	+1.7	+4.9	57.9	58.4	54.6	+0.8	+6.9	26.2	27.0	25.8	+3.1	+4.7
DE	2.4	2.0	2.3	-17.3	-12.8	66.6	62.3	61.8	-6.5	+0.7	44.3	41.3	41.8	-6.8	-1.2
DK	-	-	-	-	-	54.1	52.4	56.3	-3.3	-7.0	35.4	36.0	36.9	+1.6	-2.4
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ES	1.0	1.2	1.0	+20.6	+18.7	82.3	76.2	74.0	-7.4	+3.0	29.1	28.5	27.9	-2.2	+2.2
FI	-	-	-	-	-	37.8	38.0	38.4	+0.6	-0.9	28.6	26.1	25.2	-8.9	+3.3
FR	2.4	2.4	2.4	+2.1	+0.1	93.7	83.9	85.2	-10.4	-1.5	43.8	43.1	43.0	-1.6	+0.2
GR	1.2	1.2	1.2	-2.4	-1.1	66.1	65.2	67.6	-1.4	-3.6	25.3	25.1	24.7	-1.0	+1.6
HU	2.3	2.4	2.3	+3.4	+5.6	53.0	59.7	52.6	+12.7	+13.5	25.3	27.7	25.1	+9.4	+10.3
IE	-	-	-	-	-	-	-	-	-	-	28.3	35.2	32.3	+24.5	+9.0
IT	2.1	2.2	2.2	+8.4	+2.6	58.0	58.6	56.4	+1.0	+3.9	24.8	24.7	24.9	-0.6	-1.0
LT	-	-	-	-	-	45.2	44.6	41.7	-1.2	+7.2	14.2	13.8	12.0	-3.3	+14.8
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-	-	-	-	17.5	16.4	15.6	-6.1	+5.7
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	78.9	64.6	69.8	-18.0	-7.5	46.3	43.8	43.9	-5.3	-0.3
PL	-	-	-	-	-	54.3	48.2	47.5	-11.1	+1.6	19.9	18.5	18.8	-6.9	-1.4
PT	0.6	0.6	0.6	-1.7	+0.7	-	-	-	-	-	14.4	15.3	14.6	+6.0	+4.7
RO	1.4	1.4	1.3	-1.9	+6.5	34.6	37.8	30.6	+9.3	+23.5	15.8	15.4	14.3	-2.2	+7.9
SE	-	-	-	-	-	60.5	55.7	52.9	-7.9	+5.2	31.8	28.7	30.0	-9.8	-4.3
SI	-	-	-	-	-	-	-	45.3	-	-	-	-	-	-	-
SK	2.2	2.4	2.2	+7.2	+8.2	56.4	55.6	52.8	-1.4	+5.2	18.4	16.2	16.2	-12.1	-0.2
UK	-	-	2.0	-	-	70.0	61.3	61.8	-12.4	-0.9	40.9	41.0	41.5	+0.3	-1.3

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 100 kg

Sources: 2005-2009 data come from EUROSTAT CRONOS and EES (last update: 08/07/2010)

2010 yields come from MARS CROP YIELD FORECASTING SYSTEM (up to 10/07/2010)

AGRI4CAST crop yield forecasts at national level for Maghreb and Black Sea: 20 JULY 2010

Country	WHEAT (t/ha)					BARLEY (t/ha)					GRAIN MAIZE (t/ha)				
	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs	2009	2010	Avg 5yrs	%10/09	%10/5yrs
BY	3.5	3.8	3.4	+8.9	+13.1	3.5	3.4	3.1	-1.6	+9.5	4.7	4.9	4.4	+3.3	+9.9
DZ	-	1.4	1.4	-	-2.8	-	1.2	1.4	-	-15.7	-	-	5.0	-	-
MA	2.1	1.8	1.4	-15.0	+27.3	1.7	1.3	0.9	-24.9	+46.0	-	-	0.8	-	-
TN	2.2	1.7	1.7	-20.3	+4.1	1.8	1.2	1.3	-36.3	-12.2	-	-	-	-	-
TR	-	2.2	2.3	-	-1.5	-	2.5	2.3	-	+8.8	-	6.0	7.0	-	-14.0
UA	3.1	3.0	2.9	-1.9	+4.9	2.4	2.3	2.2	-4.0	+3.6	5.0	4.7	4.3	-5.9	+8.6

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 100 kg

Sources: DZ (FAO, last 5 years: 2003-2007), MA (Min. of Agriculture & partner INRA-Maroc, last 5 years: 2005-2009), TN (Min. of Agriculture and CNCT, last 5 years: 2005-2009), TR (FAO, last 5 years: 2005-2009), UA (data from Leonid Pogorilyy Ukrainian Scientific Research Institute).

Abstract

The 4th printed MARS Bulletin 2010 (Vol. 18, No. 4) covers meteorological analysis and crop yield forecasts for the period 10 June to 10 July 2010.

Previous related analysis available:

—Climatic update, 11/06/2010 to 04/07/2010, (CU2010/6)

—Complete Bulletin, 1st May to 10 June, (Vol. 18, No. 3)

Next printed issue

Vol. 18, No. 5: 10 August - 10 September 2010 analysis and forecasts.

Contributions

The **MARS technical report** is an EC publication from JRC/IPSC MARS Unit-AGRI4CAST Action

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MARS Agrometeorological web database is accessible at: <http://www.marsop.info>

MARS stands for Monitoring Agricultural Resources.

Proof-reading with the support of DG EDIT

Technical note The long-term average used within this bulletin as a reference is based on an archive of data covering 1975–2009. The CNDVI is an unmixing normalised vegetation index on the base of Corine land cover 2000 for arable land or grassland.

Disclaimer

The geographic borders are purely a graphical representation and are only intended to be indicative. These boundaries do not necessarily reflect the official EC position.

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2. Agrometeorological overview

Extremely high temperatures across the whole continent, and in particular in central EU and Russia, have affected the active crops. The anomalous crop development recorded in the previous period has become more severe. The shortage of rain in the UK, central EU and Russia continues; and it is still wetter than usual in the Balkans and the Black Sea.

2.2. TEMPERATURES AND SOLAR RADIATION

The unseasonal and anomalous high temperatures are the main feature affecting the crop potentialities during this period. Conditions in the British Isles have been more favourable.

June started with unseasonably high temperatures all over Europe, as also reported in the previous bulletin, followed with widely fluctuating temperatures. In the second dekad, temperatures were relatively cooler in the Iberian Peninsula (the maximum daily values were 6-8°C below the LTA values on average). Warmer than seasonal temperatures were recorded throughout the eastern Mediterranean and Black Sea basins (with Tmax 5-7°C above the norm). Across the Balkans (particularly in Greece), the Black Sea area and southern Russia, the highest values were over 35°C (39.7°C in Greece; 40.1°C in the Volga basin). A new change occurred in the last dekad, with an increase in the temperatures above the seasonal level in all of the territories facing the Atlantic, and very high temperatures in Russia (8-10°C above LTA) and cooler conditions in the Balkans and eastern Mediterranean. However, the highest values were recorded in Alentejo-Extremadura (38.3°C) and in southern Russia (38.5°C). The most unfavourable thermal agrometeorological conditions occurred in June, along the Volga River, with temperatures above 30°C for more than 28 days. Due to these large

oscillations, overall the cumulated active temperatures in June (Tbase = 0°C) did not show a large variation in EU, whilst in Ukraine, Belarus and Russia, as well as in northern Turkey, there were significant surpluses (of +15/+20%).

July started with very high temperatures almost throughout the EU (except the British Isles, Finland, southern Hungary, Romania, Bulgaria and Greece). Temperatures were particularly anomalous in the areas of eastern France, Benelux and the whole of Germany, where the maximum values were on average 8-10°C above the norm, peaking at 37.5°C in eastern Germany, 38.3°C in Aquitaine, and 41°C in Andalucía, Alentejo and the Volga basin. A temperature of 34°C was recorded in southern Sweden. The most similar year to the current one was 1976.

The areas most affected by the hot temperatures appeared to be the Volga basin, where the high temperatures persisted for many days in succession, and Germany, where the most anomalous high temperatures were recorded (the hottest first dekad of July since 1975).

2.2. RAIN AND CLIMATIC WATER BALANCE

Prolonged water shortages around the English Channel and central EU (DE, Benelux, PL) as well as in Russia. Over these areas, higher solar radiation and evapotranspiration aggravated the climatic water balance deficits. Good rain supply in the Balkans, Black Sea, northern Italy, central France, Turkey and Ukraine.

Since April, the current campaign has been characterized by an anomalous distribution of rainfall: very scarce indeed in all the areas between latitudes 50° and 60°; very abundant (especially in the eastern EU) between latitudes 50° and 45°. This geographical pattern was also present during the period under review.

In fact, the rain was concentrated in the strip between northern Spain (70mm) and the Black Sea, including central France (100-150mm), the Alpine region, Po valley (150-200mm), Slovenia (150mm), Hungary (90-120mm), Romania (100-200mm) and Bulgaria (150-170mm). In these areas the amount of rain was almost twice the seasonal values on average. These water supplies were particularly favourable for the rain-fed spring crops (i.e. maize, sunflower, sugar beet, pasture, etc.) attenuating the effect of the

high temperatures, but also delaying the harvesting of the earlier winter cereals (i.e.: winter barley). Rain was also quite abundant in Ireland, Scotland, central Sweden and also, to some extent, in the Baltics, Turkey and Ukraine.

The opposite situation was seen in UK, Benelux, central and northern Germany, western Poland and Russia, where the rain deficits became worse. In these areas, the rain deficit since the beginning of April was estimated at around 150-200 mm (-50/-60% as compared to LTA). By contrast, thanks to the clearer skies, the cumulated solar radiation values were significantly higher. However, coupled with the very high temperatures, this produced higher levels of potential evapotranspiration, which increased the crops' water requirement and therefore very quickly depleted the soil water reservoirs. Consequently, in all of these areas during the period under review, the climatic water balance was negative (-140/-160 mm), equivalent to a larger deficit (-50/-60 mm) than the LTA.

The water deficits are very likely to have badly affected crop potentiality, particularly in those areas with light soils.

3. Country-by-country review of the season

EU - 27

France - High temperatures and dry conditions in the western and northern areas affect the forecasting of wheat and barley yields. Unfavourable conditions in northern areas push down yield forecasts for potatoes and sugar beet.

The forecast for soft wheat is now 7.0 t/ha and for durum wheat is 4.7 t/ha (respectively -1.0% and -0.8% relative to the 5-years average). The winter barley forecast is 6.6 t/ha, (0.4% on the 5-years average) and rapeseed is forecast at 3.3 t/ha (-0.4%). For spring barley the forecast values are 5.7 t/ha, 4.9% below the average. Sunflower and grain maize are respectively forecast at 2.4 t/ha (around 5 years average values) and 8.7 t/ha (-1.9%). The sugar beet forecast is 83.9 t/ha, which is 1.5% below the average, and potatoes are forecast at 43.1 t/ha (+0.2%).

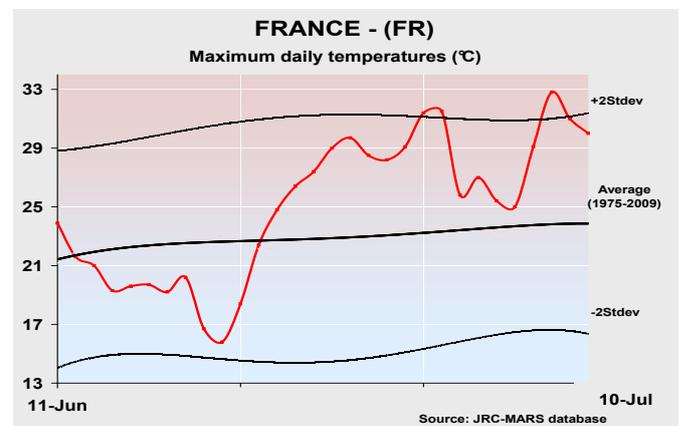
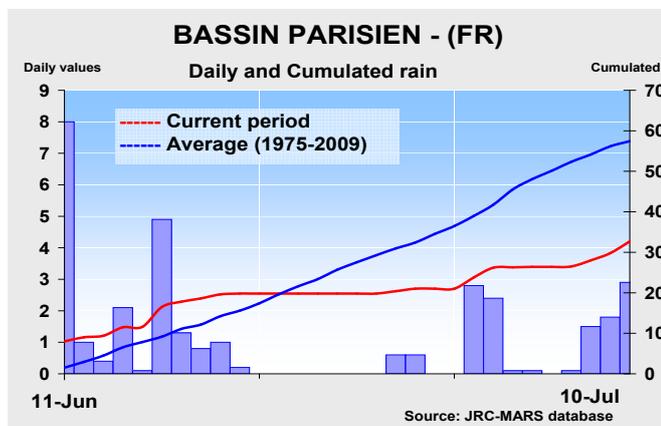
Until June 20 temperatures were very low (between 6 and 8°C below average values), but then they shot up at the beginning of July (9°C above seasonal values). Low temperatures in early June further delayed the development of soft wheat, durum wheat and spring barley crops, which were still in the grain filling phase at the end of June in central and northern areas. Thereafter, for almost 10 consecutive days (from June 27 to July 10), maximum temperatures were around 30°C.

These high temperatures have speeded up crop development and caused problems of heat shock (échaudage), especially in the Bassin Parisien. Cumulated rainfall values registered

in this period in the northern half of the country (except in the Centre region), were also lower than seasonal values. This lack of rain has increased the drought in these regions, and water levels in the soil are much lower than the seasonal values. By contrast, the central-east regions and Midi-Pyrenees show normal or high soil water values.

All these conditions have affected the yield forecasts for the different crops. Soft wheat, durum wheat and especially spring barley, for example, have seen their yield forecast decrease due to these events. Winter barley, however, has not been affected by these temperatures because it is slightly earlier than these crops; it remains close to average values.

Rapeseed was also affected, and initial harvest data show a significant fall in production compared to last year. Sunflower and grain maize show seasonal levels of development and growth. However, high temperatures and very low soil water contents in the northern areas may have significantly affected the growth of potatoes and sugar beets. Thus, their yield could decrease significantly if weather conditions do not improve in the coming weeks.



Germany - Drought and heat waves further affect the already low yields expected.

Soft and durum wheat yields are revised downwards at 7.3 t/ha and 5.3 t/ha respectively (-2.7% and -1.9% below the 5-years average), as are the yields for rape seed and spring barley which are set at 3.8 t/ha (+0.3%) and 4.7 t/ha (+0.1%). Elsewhere the yield potential for winter barley remains satisfactory at 6.6 t/ha (+2.8%). Among spring crops the prediction is for satisfactory growth potential for maize (9.7 t/ha, +4.4%) and sugar beets (62.3 t/ha, +0.7%), whereas the drought has decreased potential for potato (41.3 t/ha, -1.2%) and sunflower (2.0 t/ha, -12.8%).

At first the weather in June appeared favourable holding

out the prospect for farmers to make up the delay in development which had characterized the season. However, from the third decade onwards, temperatures increased sharply, remaining above 28°C for several days, and rainfall became more and more scarce.

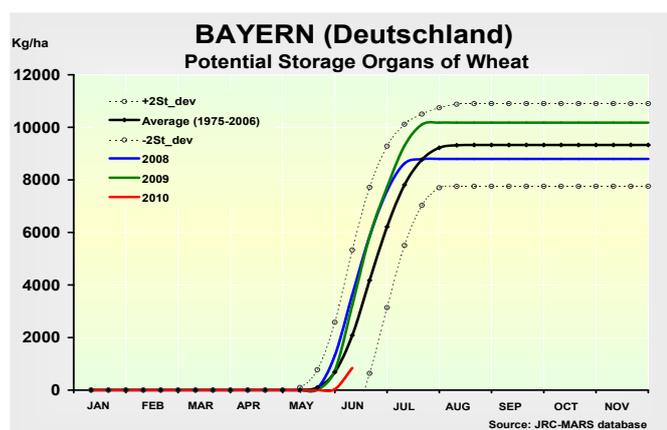
The heat wave occurred while winter cereals were in the grain filling phase, which prevented the crop growth from balancing out the deficiency in development due to the unfavourable spring weather.

From the beginning of July onwards, average temperatures were almost all around 10°C higher than usual, which - in conjunction with high irradiance values - pushed up the

daily evapotranspirative demand to very high levels.

Owing to the lack of precipitation, it was impossible to satisfy the water demand and crops suffered from water stress, especially on light soils. Western and North-western regions were the most affected by the drought (cumulated rainfall values in Niedersachsen are 75.5% below the average), whereas in the south of Germany conditions give less cause for concern.

Winter barley has suffered less impact from the heat wave and lower soil moisture contents than winter wheat, which - because it reached maturity earlier - seems to have escaped much of the negative impact of these bad July weather conditions. Soft wheat and spring barley have not yet completed the grain filling phase; therefore plants are more

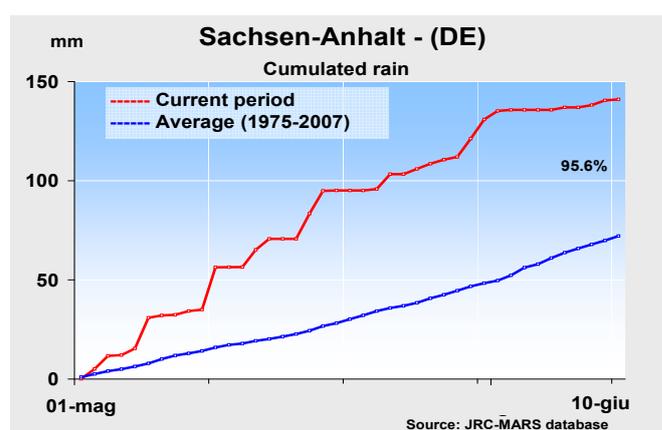


sensitive to the drought and the expected yields have to be lowered further.

Rapeseed has already reached maturity; the yield potential seems to be very low as a consequence of the heavy rains which severely affected flowering.

The drought and the high temperatures also strongly affected sunflower and potato, with the result that the simulated values of biomass and storage organs accumulation are now clearly below the average.

Instead, the yield potential of grain maize and sugar beets appears promising, although some rainfall is needed over the next dekads in order to avoid an excessive fall in soil moisture values.



Poland - Yield expectation below last year's owing to drought in the west and enduring high temperatures.

The crop yield forecast in Poland was revised as follows: soft wheat 4.0 t/ha (-3.8% as compared to 2009), winter barley 3.9 t/ha (-9.2%), spring barley 3.0 t/ha (-5.9%), rapeseed 2.9 t/ha (-6.5%), grain maize 5.6 t/ha (-10.5%), potato 18.5 t/ha (-6.9%) and sugar beet 48.2 (-11.1%). The yield is lower than the five-year average forecast for grain maize and potato, but higher for the other crops.

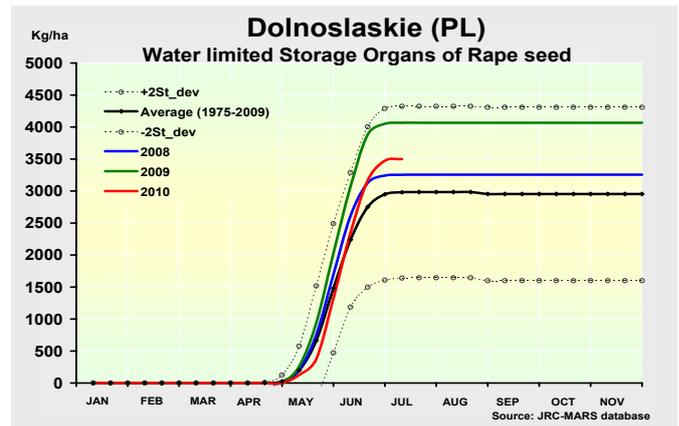
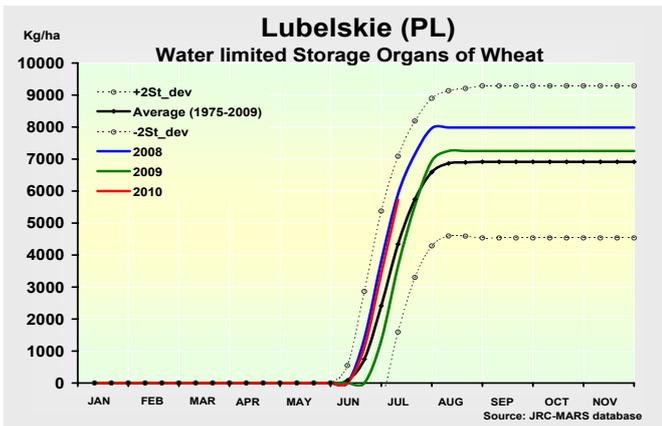
After the long winter, a dry April was recorded - followed by an extremely wet May. Since the beginning of April cumulated rainfall has been high across most of Poland (on average 80 mm), but in the north-western areas this is seasonal. From 10 June onwards, average precipitation in the country was 30% lower than usual, while rain was very scarce in the western part (20 mm was recorded in Wielkopolskie); in the eastern part precipitation was slightly above the seasonal level (with 80 mm recorded in Lubelskie). The climatic water balance showed a noticeable deficit in the western part of Poland (100 mm), whereas in the east it did not deviate from the seasonal line.

Cumulated solar radiation was very high, after being extremely low in May; cumulated active temperatures were slightly below the seasonal level. During this month, unlike the previous period, the temperatures in the east were slightly lower than in the west. In June (11th) a brief heat wave (with $t_{max} > 30^{\circ}\text{C}$) was recorded in the country, but this did not affect the crops. The period of analysis ended

with extremely high temperatures throughout the country and dry conditions, especially in the west. If this heat wave persists during the coming days, it will adversely affect the development of summer crops, and accelerate grain filling and the ripening processes of cereals, leading to further reductions in crop yields.

Relative soil moisture in the west of Poland was below the average, but in the east it was above the average. Plant development in the western parts of the country is delayed by about ten days, whereas in the eastern parts it is advanced compared to the seasonal values.

From the middle of June, according to the model simulation, water limited storage organs of rapeseed have been above the average, but below the levels recorded last year. Rapeseed is completing its ripening process and will be harvested soon. In central and northern Poland, simulations show oil seed potential as being even better than last year, whereas in the other parts of the country they are worse. Yields from cereals are likely to be good in the central and eastern parts of the country.



Spain - Good production levels expected for soft wheat and barley. Wheat harvest is over in Andalucía. Spring crops show good growth and development levels.

The forecasts for soft wheat and durum wheat are 3.4 t/ha and 1.9 t/ha respectively (+10.1% and -15.7% compared to the 5-year average). Winter and spring barley yields are forecast at 2.9 t/ha and 3.1 t/ha respectively (+17.8% and +14.7% above the 5-years average). Sunflower and grain maize are respectively forecast at 1.2 t/ha (+18.7%) and 10.0 t/ha (+0.5%). The sugar beet forecast is 76.2 t/ha (+3.0%) and potato forecast is 28.5 t/ha (+2.2%).

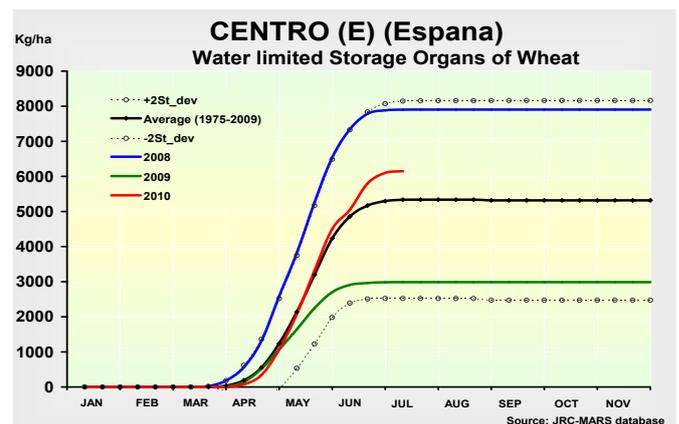
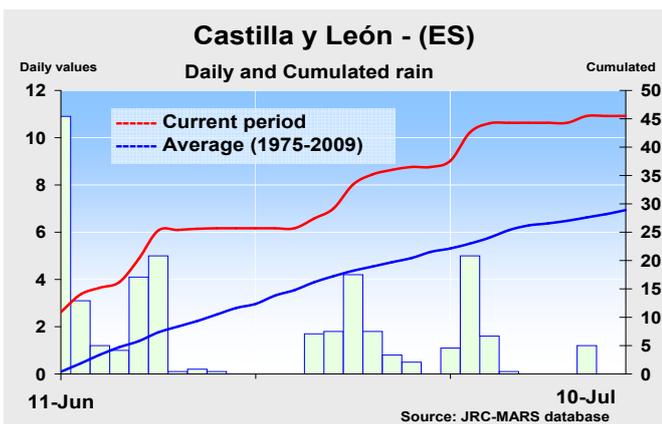
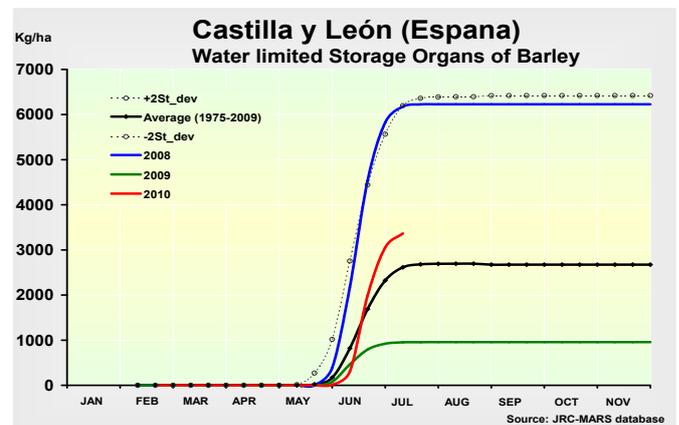
Up to 22 June temperatures were below seasonal values (by 6°C) for the entire peninsula. Thereafter, temperatures moved closer to the average values, with a very warm period in early July (8 to 10°C above seasonal values) in some northern regions (Aragón, Cataluña, País Vasco, Navarra y Cantabria). Rainfall distribution was rather mixed across the country.

Consequently, cumulated rainfall levels registered during this period in Castilla y Leon, the Cornisa Cantabria, some areas of northern Castilla-La Mancha and in south-eastern areas (Alicante, Jaen), were 30% above seasonal levels. These rains tended to be concentrated in the first 15 days of June.

In southern areas, these rains have slightly delayed the harvesting of wheat and barley (Andalusia and southern Castilla-La Mancha). Despite these rains, soil water levels are very low and even well below the average in some regions: Cáceres, León, Badajoz, Cordoba, Sevilla, Ciudad Real, Albacete, Aragon, Navarra and País Vasco, which could affect growth and the yield potential of spring crops in the coming weeks.

These conditions were favourable for the final stages of grain filling and maturation of wheat and winter barley in the regions of Castilla y Leon and northern Castilla-La Mancha. In the southern areas, harvesting has almost finished. However, the high temperatures in recent days may have affected the grain filling of spring barley and grain maize growth, particularly in the northern and north-eastern regions.

Sunflower continued to show good growth levels in the southern regions (especially in Andalusia). Potato and sugar beets are showing average levels of growth and development. However, yields of these crops could be significantly affected by water conditions and high temperatures in the weeks to come.



Belgium, the Netherlands, Luxembourg – Extreme drought since April.

Soft wheat yields are forecast at 8.5 t/ha in Belgium, 8.7 t/ha in the Netherlands and 6.5 t/ha in Luxembourg, putting Belgium and the Netherlands close to the five-year average and Luxembourg 5.9% above it. In Belgium winter barley forecasts are down slightly on 8.4 t/ha (2.1% down on 2009, but still 3.7% higher than the last five-year average). Rapeseed is forecast at 4.3 t/ha, which is 2.2% lower than the record in 2009 but still 9.0% higher than the average. For spring crops, grain maize and sugar beet yields are estimated as lower than in 2009 in both Belgium (10.9 t/ha and 70.5 t/ha respectively) and the Netherlands (12.3 t/ha and 67.4 t/ha). Potato yields are forecast at 46.1 t/ha in Belgium (2.6% up on the 2009 season and 5.0% above the last five-year average) and at 44.8 t/ha in the Netherlands (3.2% lower than the 2009 record but 2.0% higher than the five-year average). In the Netherlands spring barley is forecast at 6.4 t/ha (6.3% lower than in 2009, but 4.9% higher than the last five-year average).

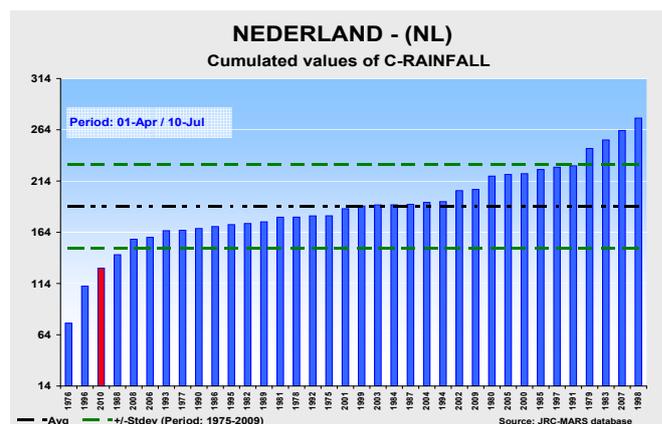
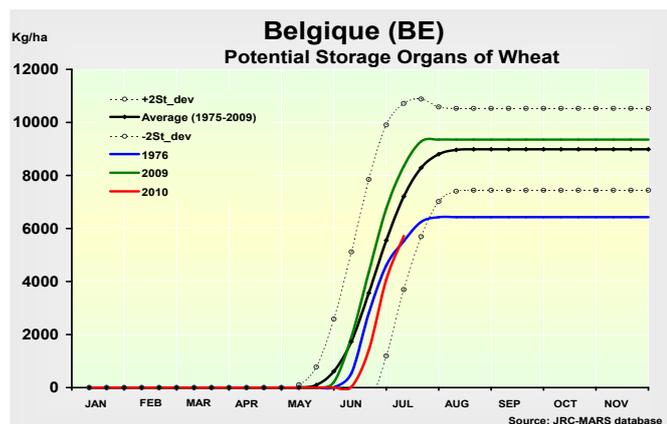
Since April, the Benelux countries have been experiencing very dry conditions, except for Luxembourg, where the cumulated precipitation is close to the average (1st April to 10th July is 183 mm). Belgium received only 113 mm (against 207 mm LTA), which was a similar situation to that

in 1976, the driest year in our time series for the period from April until July. In the Netherlands, the situation is also critical, with 129 mm of rain (against 189 mm for the LTA); here again, only 1976 and 1996 were worse during the last 35 years. The temperatures remained in the seasonal range of values, i.e. not making the situation worse for the crops with higher water demands. However, there were a couple of days of maximum temperatures (in late April and late June) that were higher than the average, at more than twice the standard deviation.

These climatic conditions have had quite a negative impact on all winter crops. For rapeseed, the relative soil moisture in Wallonia posted record deficits similar to those of 1976.

Consequently, the models simulate average yields, which are much lower than those of last year for winter crops.

Spring crops, on the other hand, seem to have resisted better because the maximum temperatures have not been particularly high. Therefore, the general conditions allowed them to gradually make up the delay in their development stage and to reach the average at the end of the first decade of July, given that the delay had persisted since the planting period. These crops should certainly benefit from the summer rains. So far, July has brought some rainy events.



Italy - Persistent wet conditions may have compromised grain yield and quality.

Despite the very variable general forecasts for the different areas, yields for winter cereals were revised downwards slightly: durum wheat is simulated as equal to 3.0 t/ha (1.0% compared to the 5-year average) and soft wheat is estimated at 5.3 t/ha (1.1%). Even worse conditions were forecast for barley (3.6 t/ha, -1.1%) and turnips (1.9 t/ha, -3.7%) which were affected by heavy rains during flowering. On the other hand, with the exception of potato (24.7 t/ha, -1.0%) - which seem to have suffered as a result of the latest increase in temperatures, summer crops show a satisfactory yield potential. Sunflower remains at 2.2 t/ha (+2.6% compared to the average), whereas forecasts for grain maize and sugar beet were revised upwards to 9.5 t/ha and 58.6 t/ha respectively (in both cases +3.9% compared to the 5-year average).

Apart from a drop in temperatures on June 20th the thermal sum has been above average throughout the country, with particularly high values recorded in the Northern

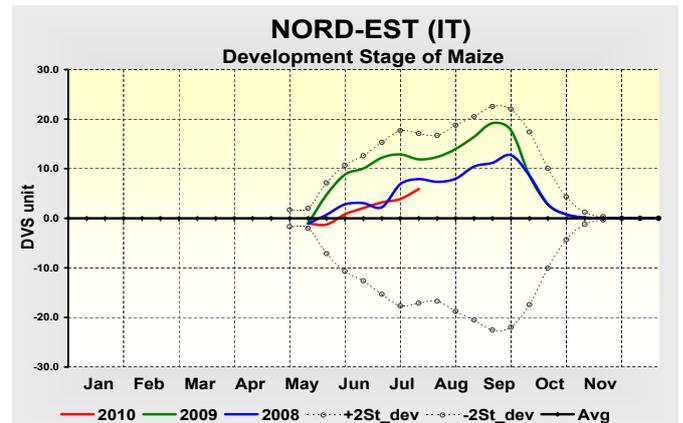
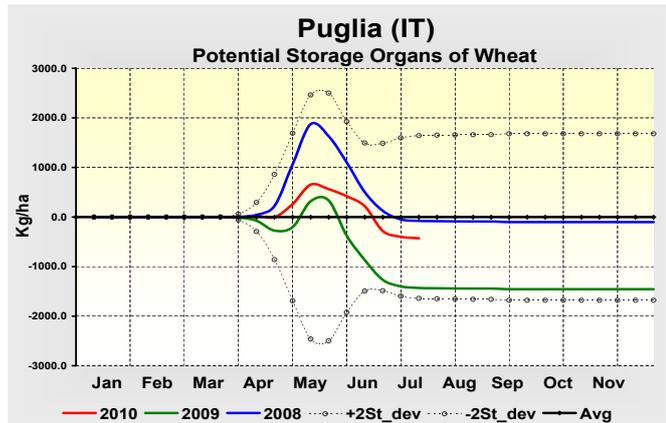
and Adriatic regions. Intense and spatially well distributed rainfall fell during the second decade of June, maintaining the already high cumulated precipitation values consistently above the long term average. These persistent wet conditions lowered the expectation of crop yield and quality somewhat owing to the unfavourable situation on the ground, namely: patchy growth, enhanced weed growth, difficulties in keeping to fertilisation plans, proliferation of diseases and pre-germination on the field. The forecast yields for winter cereals were revised downwards as a result of the strong heat wave which began at the beginning of July, and which has probably also affected grain quality even further. However the estimates are still capable of showing significant variations.

Problems of access to the field might have occurred during rapeseed harvest, compounding the forecast of a below-average yield.

At present conditions for grain maize appear good because, in spite of the heat stress, the soil water content is abundant.

However, some rainfall is needed in order to cope with the increased water demand during flowering. Sugar beet and sunflower also seem to be benefitting from the increase in temperatures, in a very similar way to the situation in 2008,

which was a very satisfactory year for spring crops. Instead, according to the values simulated by storage agencies, it was potato development that was affected by the heat wave. However there is still plenty of time for recovery.



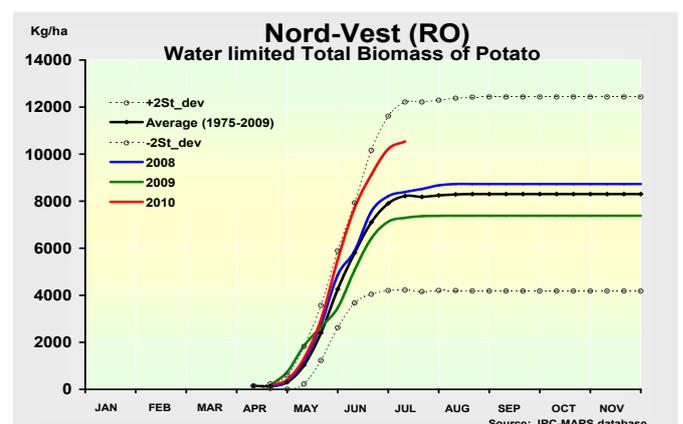
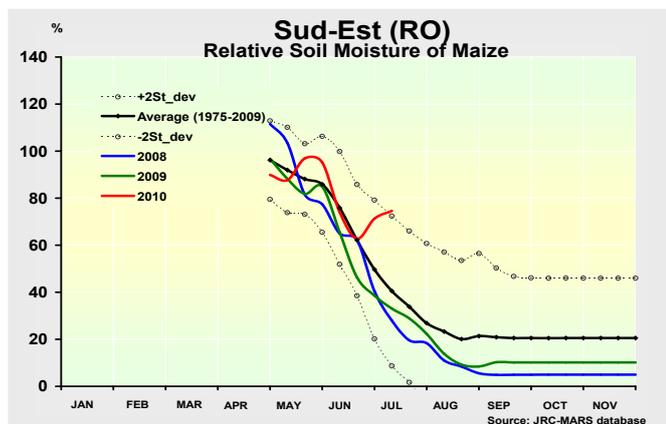
Romania - Slightly lower yields, but still high hopes for winter crops.

The forecast yields are: 3.1 t/ha (+31.3% compared with the yield of 2009) for soft wheat, 3.1 t/ha (+16.7%) for winter barley, 2.2 t/ha (+37.1%) for spring barley, 1.8 t/ha (+36.2%) for turnips (rape) and 37.8 t/ha for sugar beet (+9.3%). Most of the spring crops show a lower yield potential compared to the previous year: 4.4 t/ha for grain maize (28.4%), 1.4 t/ha for sunflower (-1.9%) and 15.4 t/ha for potato (-2.2%).

likely, with above average harvesting losses. All in all, grain production will be high, but the quality of the grain will remain well below normal. On extremely wet areas, possible damage may have been caused to spring crops through root asphyxiation and nitrogen (N) leaching.

The rain in May became even heavier in June. Total monthly precipitation reached 133 mm on average for Romania, but in the same period, in several parts of the Eastern regions, it actually exceeded 200 mm. The torrential rains brought serious devastating floods and caused significant losses to crops. The flooding and accompanying inundation of inland areas reduced the acreage of winter and spring crops to some extent. This excessive amount of water prior to the harvest was unfavourable for winter crops, as it lowers yield expectations and delays the harvest. The excessive rainfall also lessened crop quality. A slow, long lasting harvest is

Generally speaking, spring crops could have gained an advantage from the rainy weather since the current soil moisture content is much higher than seasonal values. Maize is showing a very high potential, which promises good yields except for the Nord-Vest region. The simulated biomass accumulation of potatoes seems to be exceptional in the northern half of Romania. Currently, the situation of sugar beet and sunflowers is normal. The thermal conditions of the period under review were also normal, which means that the phenological development of the crops can be calculated as an average. In the south, maize has started to flower, and other areas will soon follow suit. Sunflowers finished the flowering stage in most of the country and progressed to the grain filling stage.



UK and Republic of Ireland - Drought in UK depleted the yields. Good yields in IE.

In UK the yields forecast were revised downwards due to the unfavourable conditions: 7.7 t/ha for soft wheat (-1.7% compared to the last 5-year average), 6.6 t/ha for winter barley (+2.2%), 3.1 t/ha for rapeseed (-4.4% as compared to the last 5-year average), 5.5 t/ha for spring barley (+1.0%) and 41.0 t/ha for potato (-1.3%).

8.8 t/ha (+2.8% compared to the last year), winter barley at 8.0 t/ha (+9.5%), spring barley at 6.6 t/ha for (+11.2%) and 35.2 t/ha for potato (+24.5%).

In IE, crops potentialities were maintained: soft wheat at

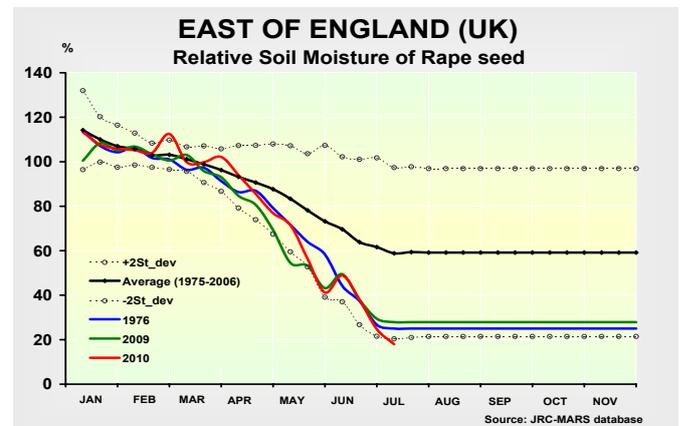
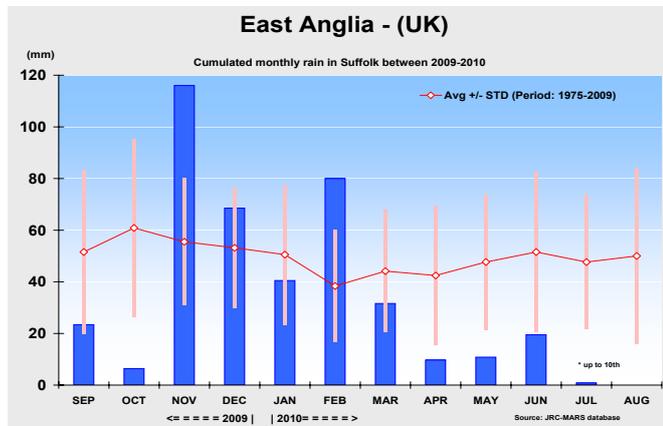
In UK, and in particular in the central and eastern areas of the country, what had been expected since March actually occurred in June and at the beginning of July: namely rainfall

was well below average for the fourth consecutive month. In fact, between 10 June and 10 July, only a few millimetres (6-10 mm) of rain were recorded. Since the beginning of March the drop in rainfall compared to the norm is estimated at over 90 mm, equivalent to 45% less than the expected amount of rain. Similar conditions occurred in 1976 and 1995. Fortunately, the temperatures were close to the LTA, thereby avoiding further stressful conditions, such as those which were being experienced on the other side of the English Channel.

However, the drier conditions were also associated with higher levels of solar radiation, which represent a positive factor for active crops with a fully developed foliar system. However, at the same time this also meant higher levels of potential evapotranspiration and crop water requirements. Consequently, the soil water content became rapidly

depleted and the simulation revealed critical values from the end of June onwards. Unfortunately, even in the coming days only a very moderate amount of rain is forecast (which at least will not disturb the crops that are harvested very early, like winter barley and rapeseed); therefore, the expected yields are now lower than in the previous bulletin.

In Ireland, agrometeorological conditions were definitely improved, with more seasonal amounts of rain and cumulated active temperatures. Also the simulated soil water content appeared quite close to the normal values and a higher level of solar radiation led to forecast yields that were the highest in the past 5 years. Conditions for permanent pastures were also quite favourable.



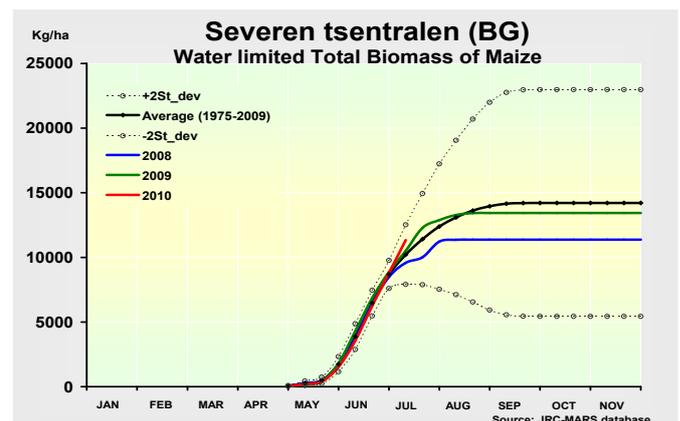
Bulgaria - Heavy rains, but average yields for winter crops so far.

The yield estimates for Bulgaria are the following: 3.7 t/ha (+14.5% compared to 2009) for common wheat, 3.3 t/ha (+7.2%) for winter barley and 2.3 t/ha (+7.7%) for rapeseed. The spring crops yield is forecast to be higher than the previous year: 5.2 t/ha for grain maize (+25.3%), 1.9 t/ha for sunflower (+10.9%) and 17.1 t/ha for potato (+5.1%).

Rainfall started in mid-June in Bulgaria and lasted until mid-July. The precipitation exceeded 50 mm practically everywhere, but in the most affected eastern territories – which represent the main grain producing region of Bulgaria - altogether 150-200 mm of rain fell in the relevant period. The daily maximum temperatures remained significantly below the average and no heat wave was experienced during the grain filling and ripening stage of cereals. The continuous precipitation endangered the yield and considerably lowered the grain quality in particular. Consequently, the harvesting works were complicated, hampered and delayed by the wet weather, which meant possibly bigger yield losses. However, despite all the constraints, the yield of winter crops is expected to be average.

The rainfall meant that the usual drying process of soils proceeded more slowly, thus providing better water supply conditions for the spring crops in July. Owing to moderate summer temperatures, the phenological development is lagging behind by some days. Sunflower has reached the

grain filling stage and maize is in the first half of flowering. Biomass accumulation seems to be favourable, particularly in the northern regions of Bulgaria. The simulated yield potential is very high for grain maize. It is even possible to think in terms of near-record yields, assuming further clement weather conditions. The spring crops have developed a large canopy which efficiently intercepts solar radiation. The future yields of maize and sunflower crops will highly to a large extent on the soil moisture conditions in the coming month.



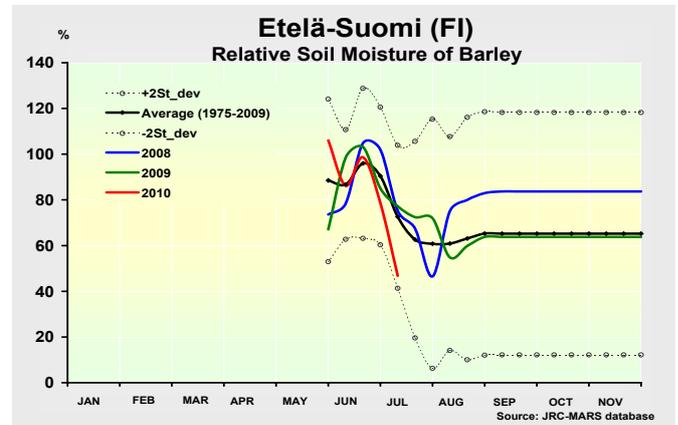
Finland - Dry and hot weather conditions and accelerated crop development.

The yield forecast for soft wheat is 3.8 t/ha (down by -5.4% compared to the previous year 2009), for rapeseed it is revised down 1.4 t/ha (-18.0%), for spring barley 3.7 t/ha (+2.1%), potato 26.1 t/ha (-8.9%) and sugar beets 38.0% (+0.6).

The first ten days of the period under review were rainy and colder than usual, but were followed by warm and dry weather conditions. The cumulated rain since the beginning of April is seasonal, but since 20 June rain has been very scarce. Now, both rainfall and climatic water balance values are below the seasonal average. Cumulated rain is 20% lower than usual and climatic water deficit is as much as 40% higher than normal. Cumulated active temperatures are slightly above the averages and solar radiation is now significantly higher than normal. As a result of high temperatures and scarce rain, the moisture levels in soil under cereals have fallen rapidly in the last two weeks, coming close to the -2 Standard Deviation line.

The yield potential for spring barley is now good, but plant development is at least ten days in advance compared with both last year and the average. This fact, combined with the

impact of late sowing due to the long lasting winter, might have led to a risk of worse grain quality and lower yields. The coming days in July will be crucial for grain filling and crop yield formation. The next ten-day weather forecast predicts seasonal temperatures and rain, which would maintain the high yield potential of cereals.

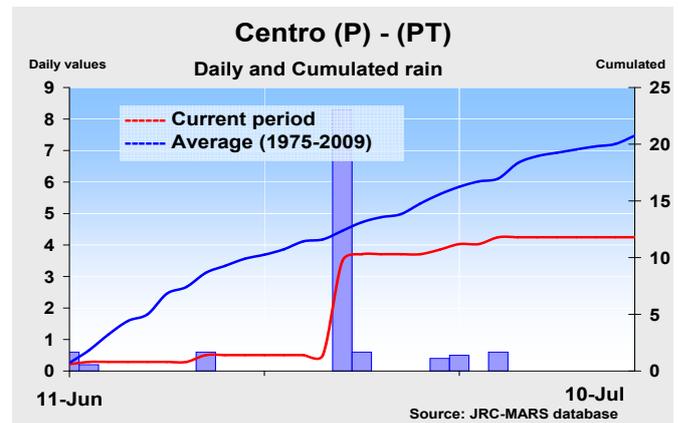


Portugal - Despite favourable conditions, the forecasts for winter crop yields are lower than in recent years. Expectations for spring crops remain good. However, soil water content could affect future growth.

The forecast for soft wheat is 1.3 t/ha (-26.5% with respect to the 5-year average). Winter barley yield is forecast at 1.6 t/ha (13.8% below the 5-year average). Sunflower and grain maize are forecast 0.6 t/ha and 6.1 t/ha respectively (+0.7% and 7.6% above the 5-year average). Potato is forecast at 15.3 t/ha (4.7% above the 5-year average).

Temperatures were below seasonal values up to mid-June (average temperature was 4°C below the seasonal values). Thereafter, a very warm period observed at the beginning of July, especially in the Alentejo region, where maximum temperatures around 40°C were recorded (9°C above normal values). These changes in temperature were accompanied by an almost total lack of rainfall in central and southern regions, and only the Norte region showed cumulated rainfall levels above seasonal values. Thus, the soil water content is relatively low in northern areas of Centro and in Alentejo. Only Norte and southern areas of Alentejo continue to show high values for soil water content. Winter crops have been harvested, but yield forecasts remain very low compared to

recent years, because of heavy rain during winter and early spring. In contrast, spring crops (grain maize, sunflower and potato) are maintaining seasonal levels of development and growth. However, the moisture conditions in the regions of Alentejo and Centro during the coming months are likely to be crucial for this year's production.



Denmark and Sweden - Favourable conditions and yields revised slightly upwards.

Denmark: soft wheat is estimated at 7.3 t/ha (-0.6 % as compared to the 5-years average, but down -10.0% as compared to 2009), winter barley at 5.8 t/ha (very similar to the 5-years average and down 10.7% vs. 2009), spring barley at 5.1 t/ha (+2.4% as compared to the 5-years average and -8.8% vs. 2009), rapeseed at 3.6 t/ha (respectively +2.6% and -5.3%) and potato at 36.0 t/ha (respectively -2.4% and +1.6%).

Sweden: soft wheat is estimated at 5.9 t/ha (-3.3 % as compared to the 5-years average), winter barley at 5.2

t/ha (-3.8% as compared to the 5-years average), spring barley at 4.3 t/ha (+2.8% as compared to the 5-years average and -5.9% vs. 2009) and rapeseed at 2.8 t/ha (+4.0% and -8.2%) and potato at 28.7 t/ha (respectively -4.3% and -9.8%).

Thanks to the generally favourable agrometeorological conditions recorded in the period in question, the forecasts are being revised upwards.

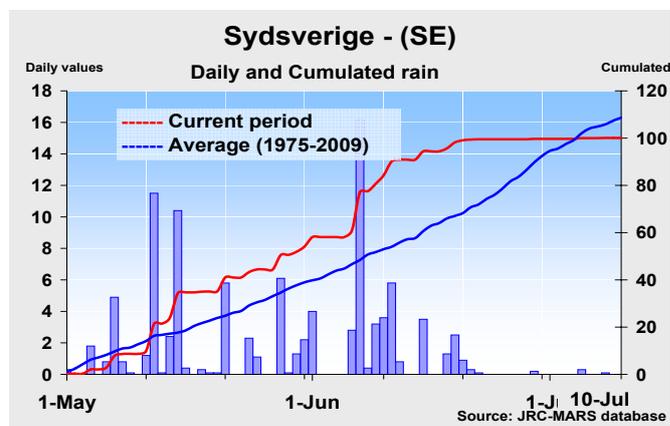
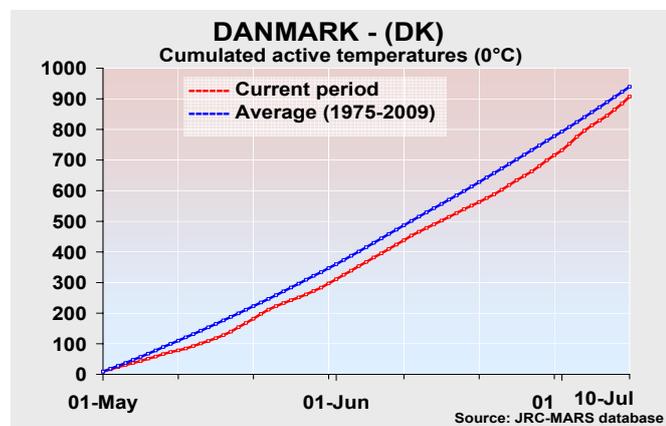
In fact, this area was only partially influenced by the rain shortage that occurred in many neighbouring countries and

the temperatures were also quite close to the seasonal average; in any event, they stayed within the limits of seasonal variability, without extremes or excesses.

As mentioned, the delay in crop development accumulated during the previous period, as a result of the temperature conditions, could not be made up, but it did allow regular and constant growth and biomass accumulation, which appeared to be in line with or even higher than the stand-

ard values for this period.

Moreover, in compensation for the abundant rain which fell at the beginning of June, it rained only sporadically between the 10 June and the 10 July, and long sunny periods were recorded which had a beneficial impact on the active crops; the very large "leaf area index" present at these stages of the crops cycle benefited likewise.



Greece - Below average yields.

Northern Greece (Voreai Ellada) experienced a normal season, while in Kentriki the production areas were characterized by rainfall deficits from April onwards. Soft wheat is now forecast at 2.6 t/ha. Durum wheat has been revised down from the earlier forecast to 2.2 t/ha. Maize is forecast at 9.1 t/ha and sugar beet at 65.2 t/ha.

Greece saw a few consecutive hot days in the second half of June, with the highest temperatures of between 38° and 40°C in Thessalia having a negative impact on the crops. So far, July temperatures are below average by as much as 10 degrees; cumulated active temperatures are average.

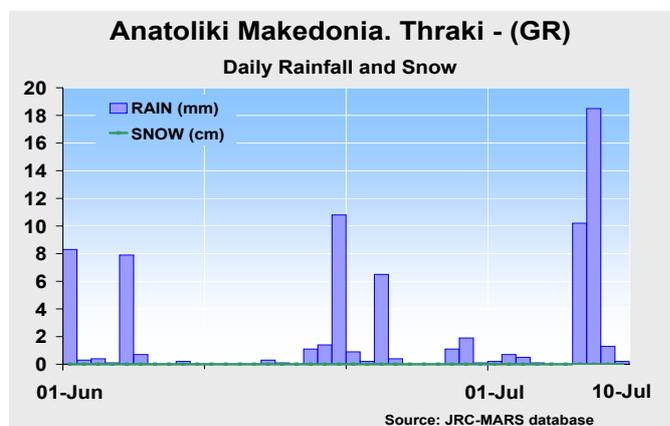
Rainfall for the region of Voreia was close to the average and the west coast was characterized by the lack of rain (Dytiki Ellada: - 86 % but with a good water supply until the end of March).

A couple of consecutive rainy days were recorded for Anatoliki Makedonia and Kentriki Makedonia, which may have restricted harvesting activities.

Winter wheat started maturing at the end of June across the country, slightly ahead of time compared with the previous year. Soil moisture followed its normal course, with the

exception of Thessalia and Dytiki where values were also low during sensitive crop stages.

Grain maize has reached the flowering stage everywhere and is at the grain filling stage in Thessalia and Kentriki Macedonia.



Austria and Slovenia - Persistent rainfall followed by a heatwave depressed expected yields slightly. Slovenia: a good season is expected.

In Austria, except for grain maize (10.6 t/ha, +3.2% compared to the 5-years average) and sugar beets (69.1 t/ha, +1.8%), crop yield forecasts were scaled down from the previous analysis because of the persistence of heavy rains, followed by the recent heat wave. Soft wheat and durum wheat seem to have suffered less from these unfavourable conditions; therefore, their figures remain above the 5-year average with 5.2 t/ha (+2.1%) and 4.4 t/ha (+3.9) respectively, whereas yield expectations for the remaining winter crops are below average. Rape-seed is due to produce 3.0 t/ha (-3.3%), winter barley 5.4 t/ha (-2.2%) and spring barley 4.0 t/ha (-0.4%). The

conditions for sunflower (2.6 t/ha, +0.2%) and potato (32.2 t/ha, +1.0%) will be at or around the average. In Slovenia, on the other hand, a good season is expected: common wheat is forecast at 4.5 t/ha (3.8% above the average), barley at 3.9 t/ha (+3.8%) and grain maize at 7.9 t/ha (+4.2%).

The heavy rains which were a feature of the previous period of analysis continued until the second dekad of June, keeping the cumulated values significantly above average. The persistent cloudy weather made it more difficult to recoup the loss of the already small number of sunshine hours. Slovenia, on the other hand, received less rainfall (cumulated

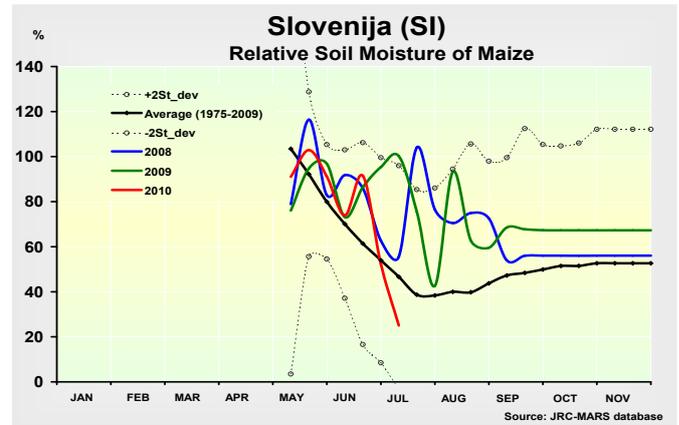
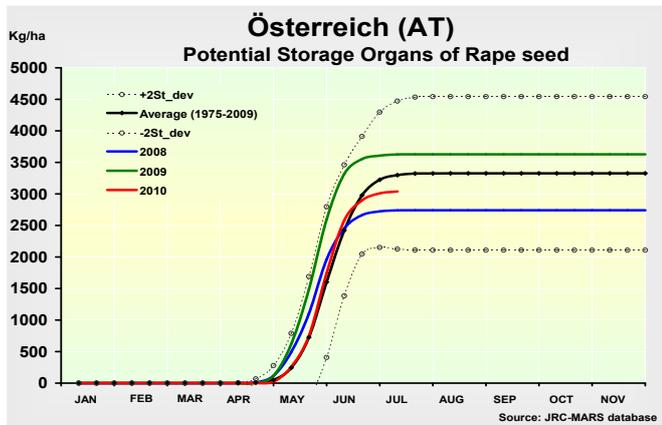
values were 20.5% below the average at the end of the period of analysis) and, as irradiance levels were satisfactory, the evapotranspiration potential of plants climbed above the LTA, causing concerns about the future availability of water for summer crops. From the beginning of June onwards, temperatures in both countries, have been higher than the average, leading to heat waves (maximum temperatures above 28°C for several days) around 12 June and 3 July followed immediately by an even bigger heat-wave which is still ongoing; these sudden high temperatures might cause additional stress, mainly to cereals in the last stage of the grain filling phase, which is already being affected by the wet conditions during flowering. Instead in Slovenia, simulated values of storage organs accumulation are good both for winter barley and soft wheat. The extremely high temperatures cut short the development of

spring barley, causing a suboptimal canopy expansion and an anticipated senescence which seems now to be reflected in a suboptimal accumulation of biomass.

Also the expected yield potential of rapeseed is below the average due to the shorter grain filling phase and the very wet conditions during harvest.

Starting from the beginning of June, maize is also showing signs of anticipated development associated with increasing water requirements, which could become difficult to satisfy if these hot conditions persist. The risk of drought stress is enhanced by the fact that the rooting system has remained superficial, owing to the very high soil water content during emergence.

Average conditions are also presented for the other summer crops, even though the situation depends very much on the thermal and precipitation regime in the weeks ahead.



Hungary - Wet weather lowers yield potential for winter crops.

The wet weather continued in June, pushing down the expectations of winter crops even further, mainly in terms of yield and quality. The forecast yields were revised to 4.2 t/ha for soft wheat (+9.2% compared to the dry year of 2009), 4.1 t/ha for durum wheat (+11.4%), 3.8 t/ha for winter barley (+5.9%) and 2.4 t/ha for rapeseed (+13.3%). The yield potential seems to be more favourable for spring crops: 3.4 t/ha for spring barley (+29.7%), 7.1 t/ha for grain maize (+10.4%), 27.7 t/ha for potato (+9.4%), 59.7 t/ha for sugar beet (+12.7%) and 2.4 t/ha for sunflower (+3.4%).

In June, cumulated precipitation was around 94 mm, exceeding the LTA by 25-30 mm. Once again, the middle of the month in particular was very wet. From 22 June the weather turned drier, which helped the ripening of the winter cereals, as well as the start of the harvesting work. A hot spell lasting one week was recorded from 8 to 14 June, which slightly affected the wheat and barley that was in the grain filling stage. The grain filling of rapeseed was weak and the grains remained small.

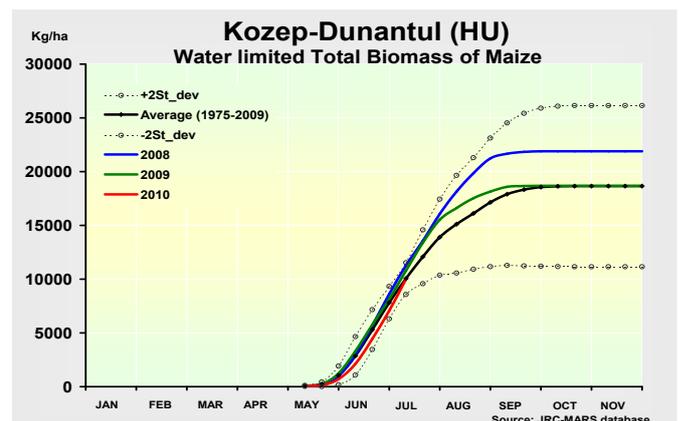
Due to the delayed phenological development and wet soils, the harvesting of cereals was postponed by 1-2 weeks.

The harvest will probably be difficult and costly this year due to the high soil moisture, very unhomogeneous fields and previously damaged plants. Increased harvesting losses are likely. The grain quality for either wheat or barley is expected to remain below average. The lack of adequate pest control has increased the rate of fungal infections,

which could cause further problems.

The development of most of the crops has been somewhat delayed; sunflower have just started flowering. The biomass accumulation of grain maize, sunflower and sugar beet is average at this stage. The simulation points to a good potential potato yield. Weeds are very common this year, since chemical and mechanical weed control either proved impossible or was inefficient. Next month's water supply will be crucial for the final yield formation of spring crops.

Simulations with models indicate satisfactory biomass accumulation for cereals, whereas the values simulated for rapeseed are 20 % higher than average. The next month will be crucial for the final yield of winter cereals.



Czech Republic and Slovakia - Near average yields in both countries.

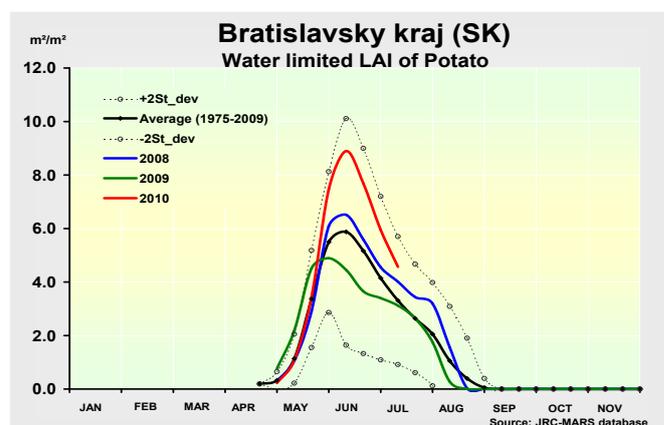
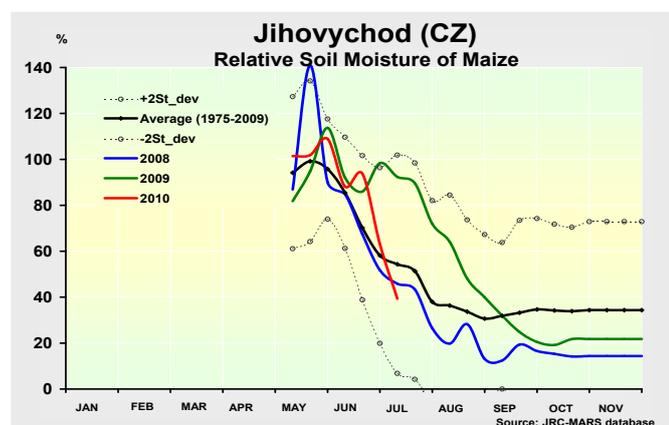
In the Czech Republic yield forecasts are similar to those of the previous year: 5.3 t/ha for soft wheat (+0.6% compared to 2009), 4.8 t/ha for winter barley (-1.1%), 4.3 t/ha for spring barley (+1.7%), 3.2 t/ha for turnips (+1.0%), 7.8 t/ha for maize (-7.2%), 2.4 t/ha for sunflower (+1.7%), 27.0 t/ha for potato (+3.1%), and 58.4 t/ha for sugar beet (+0.8%). The yield estimates for the Slovak Republic are the following: 4.2 t/ha for soft wheat (+4.8%), 3.7 t/ha for winter barley (-3.3%), 3.5 t/ha for spring barley (+2.9%), 2.5 t/ha for turnips (+6.1%), 6.9 t/ha for grain maize (+1.4%), 16.2 t/ha for potato (-12.1%), 55.6 t/ha for sugar beet (-1.4%), and 2.4 t/ha for sunflower (+7.2%).

After the heavy rains and floods in eastern Moravia in May, the weather became drier. From 15 June onwards rainfall remained below average, and on the following 20 days there was no significant precipitation. It is perhaps premature to talk about a serious water shortage, but the limited water supply is bad for the spring crops and cereals, particularly in Bohemia, since the latter's crops are in the sensitive development stage of grain filling. If the dry period continues and is combined with high daily maxima, then maize, potato and sugar-beet yields are liable to decrease. The thermal conditions of the last month were moderately warmer (+1.3°C) than LTA, but without extreme events. The phenological

development of winter wheat is delayed by 5-10 days, which suggests to a postponed harvest. The development of the leaf area index of spring crops followed the average pattern, but biomass accumulation is slightly below average. The current model simulations depict average conditions of crop development and expected yields.

The cumulated rainfall for Slovakia during the period under review was 74mm, a value which is just +14% higher than the LTA for the country as a whole. The distribution of precipitation can be characterised by small spatial anomalies. The daily maximum temperatures went above the +30°C threshold for short spells, and therefore did not have any serious deleterious effect on the grain filling. The unfavourable weather conditions in May probably led to a drop in not just the yield prospects, but also the expectations of grain quality for barley and wheat. Wheat harvesting is expected to be delayed by 1-2 weeks in western Slovakia. Drier weather in July could make the harvesting of cereals easier.

In spite of the rainfall, the relative soil moisture under the spring crops fell sharply to the average level of mid July. Sunflower began flowering 1-2 weeks ago, and now maize is at the end of the vegetative phase. The simulated values of canopy expansions reveal a favourable situation for potatoes with very high leaf area indices, but the other crops are exhibiting only a normal development.



Estonia, Latvia and Lithuania - Winter crops yield expectations good in EE and LV, reduced in LT.

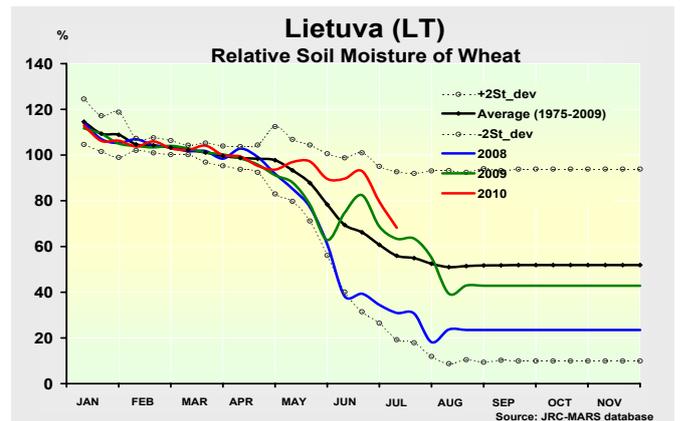
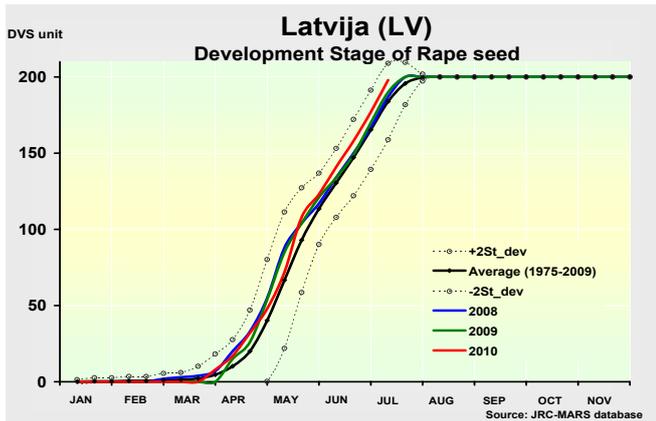
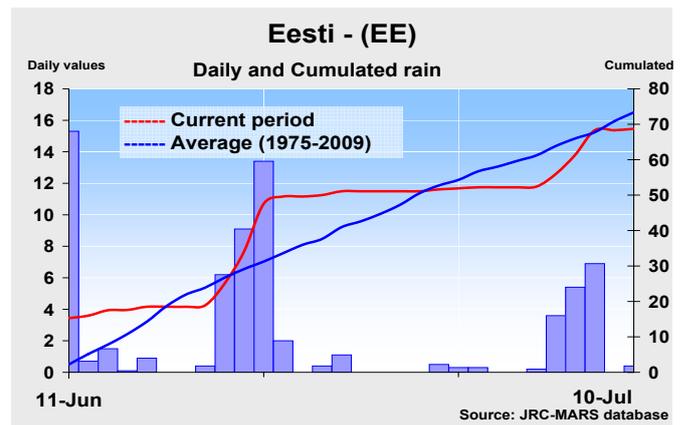
Yield forecasts for Estonia are as follows: soft wheat remains at 3.1 t/ha (+3.9% compared to the year 2009), with spring barley at 2.5 t/ha (-8.2%) and rapeseed 1.6 t/ha (-2.5%). For Latvia, yield forecasts are: soft wheat 3.7 t/ha (+2.0%), 2.3 t/ha for spring barley (-7.2%), rapeseed 2.2 t/ha (+1.0%) and potato 16.4 t/ha (-6.1%). For Lithuania, yield forecasts are: 4.1 t/ha for soft wheat (-2.2%), 3.8 t/ha for winter barley (-0.7%), 2.8 t/ha for spring barley (-6.1%), rapeseed 2.0 t/ha (-7.4%), potato 13.8 t/ha (-3.3%) and sugar beet 44.6 t/ha (-1.2%).

Since the beginning of April the cumulated rain and climatic water balance in Estonia and Latvia has remained steady at the average level. Lithuania recorded a surplus of precipitation compared with the seasonal level, and now the climatic water deficit is almost twice what it usually is.

The period began with a couple of warm days in Lithuania followed by a colder spell. Temperatures have been above the average since the end of June. There is a risk of the maximum temperature of 30°C being exceeded throughout all of the countries in the coming days. In all Baltic countries, both active temperatures and solar radiation are above the normal values, mainly owing to an unbroken warm spell since the end of June. Rain was concentrated mainly between the first and second dekads of the period under review. Soil water reserves and soil moisture were sufficient in Latvia and Estonia, while in Lithuania they were above normal.

In Lithuania and Latvia, since the last ten-day spell in June the previously good yield potential of oil seed rape has fallen below the average and also below last year's level.

The high temperatures were the most likely cause of the speeding up of the ripening process, leading to expectations of a decrease in yield. The development of winter wheat is slightly advanced compared with the seasonal values, although the crop still presents a better than average yield potential. Spring barley in all of the countries is at an advanced stage of development (at least one dekad). Even if it has positive yield potential, there is still a risk of poor grain quality, because of the abnormal weather conditions.



Black Sea area

Turkey - Season characterized by rainfall surplus.

For Turkey the month of June brought an exceptional amount of rain, maintaining the plentiful water supply throughout the season. Winter cereals reached maturity well in advance. Winter wheat yields are kept at 2.2 t/ha. Winter barley is set to reach 2.5 t/ha, achieving a very good yield level. Grain maize is expected to yield around 6 t/ha.

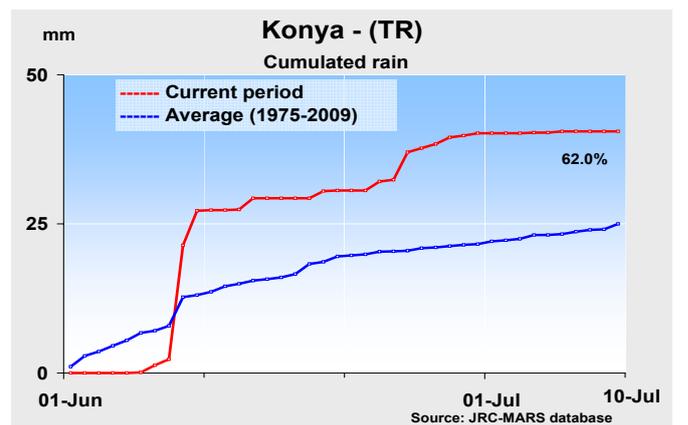
The central districts as well as the main cereal production areas have experienced seasonal temperatures in June and the first dekad of July. The second dekad of June was marked by 6 - 9 consecutive hot days (> 30°C). Cumulated active temperatures were slightly above the average.

June was characterized by a series of rainy events with two distinct periods. The first was between 7th and 10th of June and the second between the 23rd and the end of June. The last similarly wet June was recorded in 1997. Thus, June rainfall was well above the average, at 40 to 60 mm more than the LTA cumulated from 1 June until 11 July for the central regions. In general, the whole season was characterized by a good water supply, and soil moisture values are satisfactory throughout the country, although the rainfall may have hampered some harvesting activities for winter cereals.

Wheat has reached maturity well in advance. The general trend of the advanced development throughout the whole season is also clearly visible in the NDVI profiles, showing an early peak in biomass accumulation, but it is simulated at a low level in our model. The only comparable level of ad-

vancement in the cycle was in 2001.

Grain maize shows a gradient from grain filling at the Mediterranean coast towards vegetative stages in the more central regions with a slight advance in development, but an unsatisfactory simulated leaf area development.



Ukraine - Hot and dry in the north, heavy rains in the south.

In June and July, Ukraine experienced both heat waves and heavy rains. The yield forecasts remained at a similar level as for the previous bulletin, apart from rapeseed. The yield forecast for wheat has fallen from 3.2 to 3.0 t/ha (- 19 % compared with 2008). Barley is still forecast at 2.3 t/ha (- 23% compared with 2008). Maize is expected to reach 4.7 t/ha (equal to 2008),

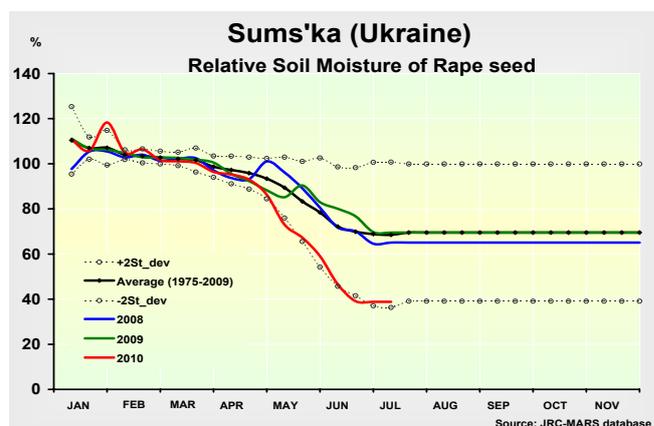
while the forecast for rapeseed is down at 1.6 t/ha (- 24% compared with 2008).

In the period under consideration (from 10th June to 10th July), air temperatures in the whole country were higher than the long term average. The second dekad of June was warm in both the north and south; thus two successive dekads were very hot only in the northern oblasts, where air temperatures were cumulatively 120°C higher than LTA during the three dekads under review.

When compared with the average, the precipitation during the period in question was slightly lower in the north and slightly higher in the south. Northern-central oblasts from Sumska to Kirovohradska did not receive enough rainfall in June; this - combined with high temperatures - produced soil moisture levels which were 30% lower than normal. Southern and eastern oblasts experienced heavy rainfall, which might have disrupted harvesting.

Wheat and rapeseed in both north and south oblasts seemed

to be adversely influenced by extreme meteorological conditions (heat waves and heavy rainfall) and yield forecasts were downgraded. Development of barley and maize was promising and average yields are expected.



Eastern countries

Belarus - Favourable conditions for winter and summer crops.

Favourable conditions in the period under consideration benefited crop development. Wheat yield is still forecast to reach 3.8 t/ha (+ 9% compared with 2009), while barley is at 3.4 t/ha (- 1.6%). Maize development is promising and is expected to reach 4.9 t/ha (+3.3%). Rapeseed yield is forecast at 1.6 t/ha (- 11%).

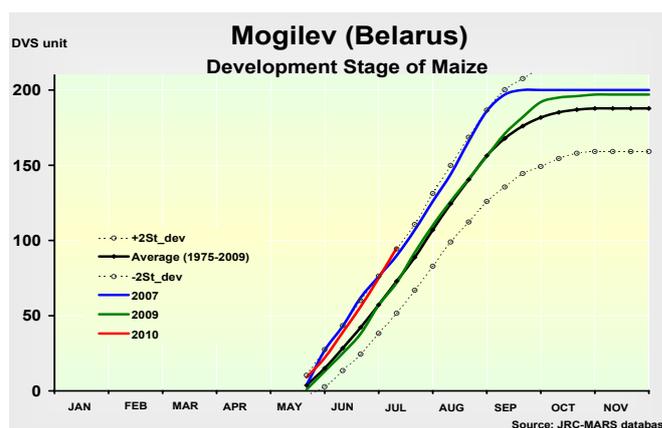
The review period was hot throughout the country, with heat waves especially in the south-eastern part at the end of June. July was only slightly warmer than the average, and a positive influence on crop development was therefore expected. Moreover, as a result of sufficient precipitation, soil moisture was close to the long term average and even slightly higher in the northern part.

Only the south-eastern region, Gomel, experienced a mild drought in the middle of June. All crops developed faster than normally and good yields are forecast.

Russia - Significant reduction in yields due to severe drought in the Volga District.

The second dekad of June began with very high air temperatures in the Caucasian Districts, reaching maximum values in excess of 36°C. At the end of June, temperatures in the Central and Volga Districts were above 38°C; the beginning of July was hot everywhere. Volga District

experienced more than 12 successive days of heat wave and air temperatures above 30°C. Precipitation in the period under review was not sufficient, especially in the agriculturally important Volga District. In oblasts from Volgogradskaya to Bashkortostan, crop development was affected by a very severe drought and a significant reduction in yields is expected. The Normalized Difference Vegetation Index derived from satellite images confirms unfavourable vegetation conditions in Volga District, with values 25% lower than normal. Based on the analysis of NDVI derived from MODIS data, conducted by the Space Research Institute of the Russian Academy of Sciences, the map below shows the oblasts affected by drought. According to the analysis, NDVI decreased during the last two weeks in the oblasts affected by drought. Crops in the Caucasian District are exhibiting average development owing to sufficient rainfall.



Maghreb countries

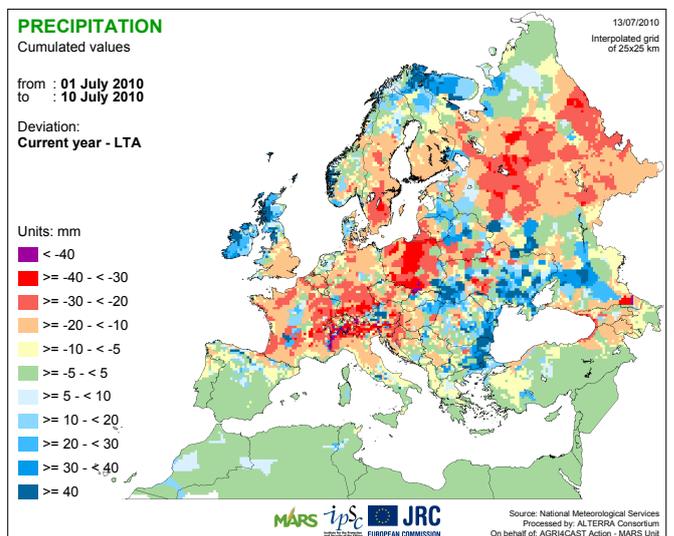
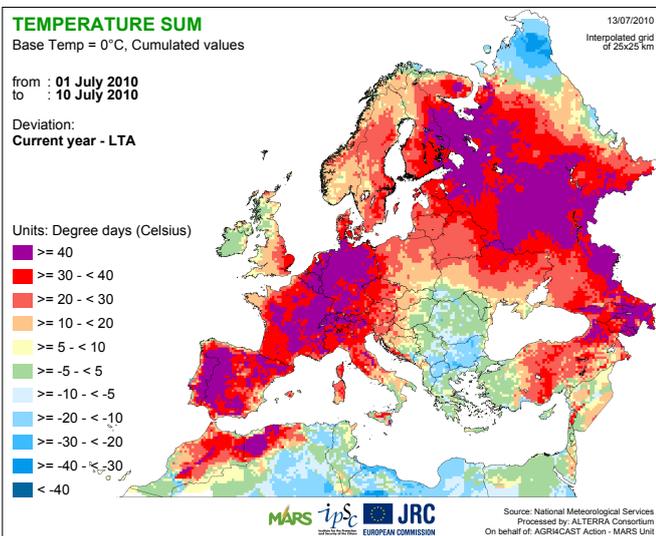
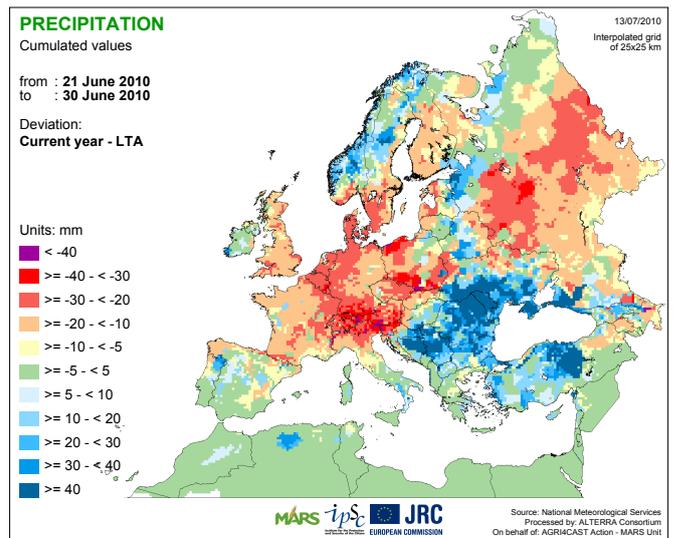
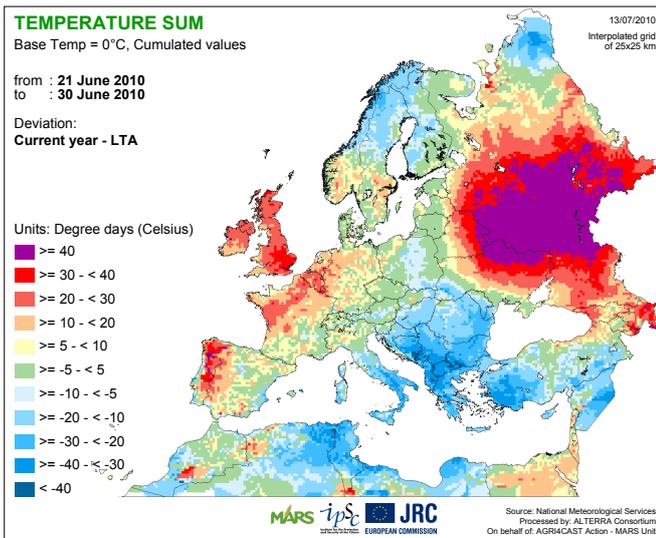
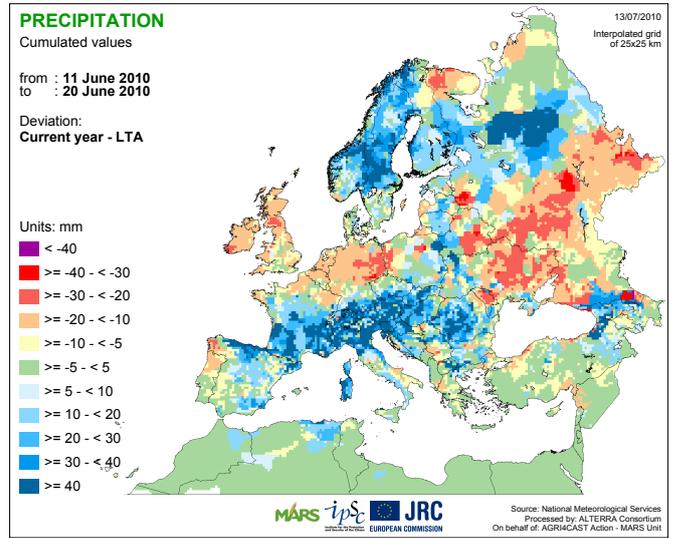
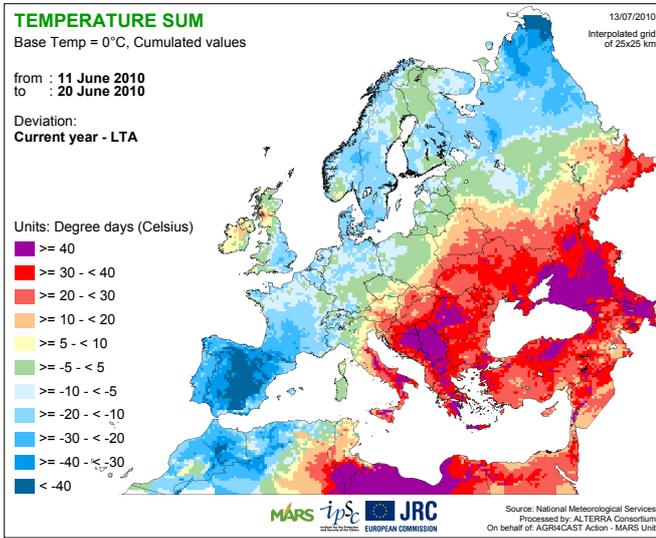
Maghreb - An average winter cereal campaign.

The harvest period in Morocco is over. The average yields for wheat (durum and soft wheat) are confirmed at 1.8 t/ha (-15.0% compared to 2009, but +27.3% compared to the long term average). Barley is estimated at 1.3 t/ha (-24.9% in comparison to 2009 and +46.0% compared to the LTA). In Algeria and Tunisia, the harvest began a little later (mid-June

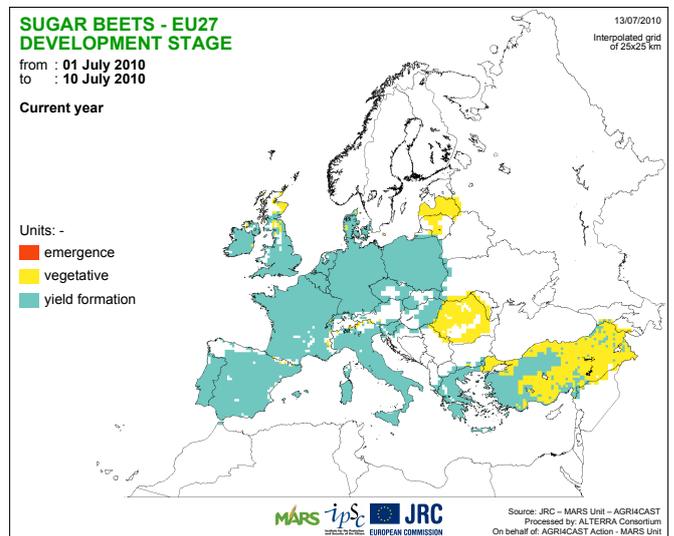
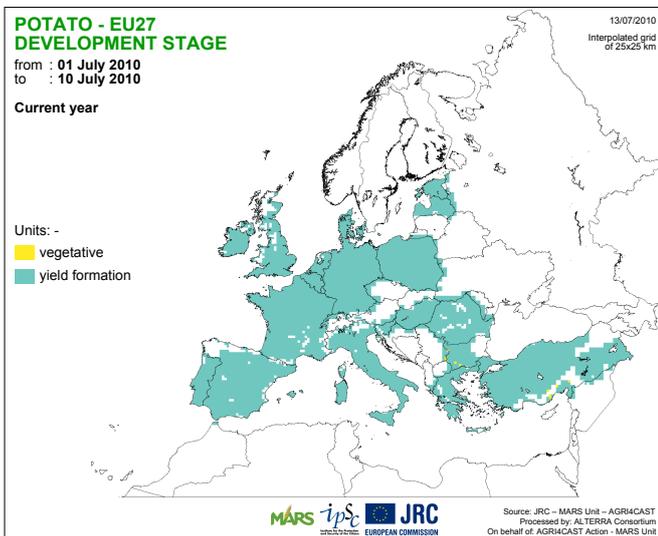
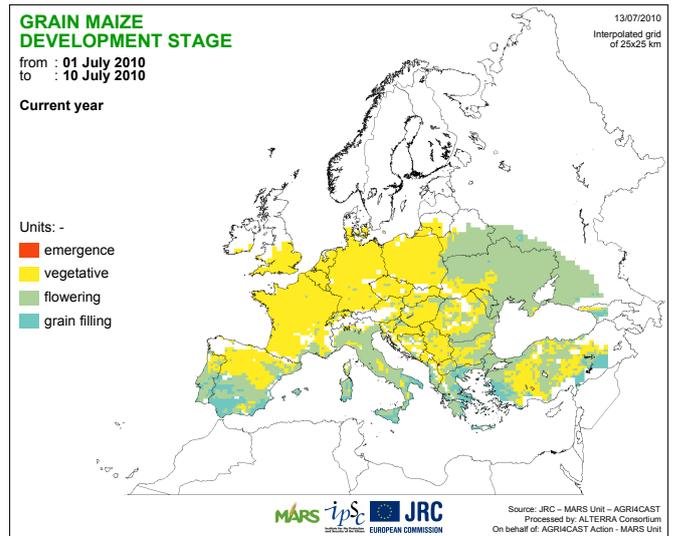
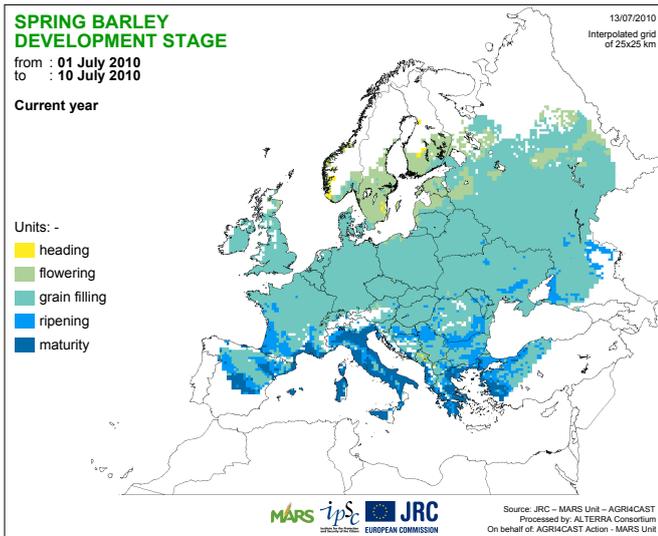
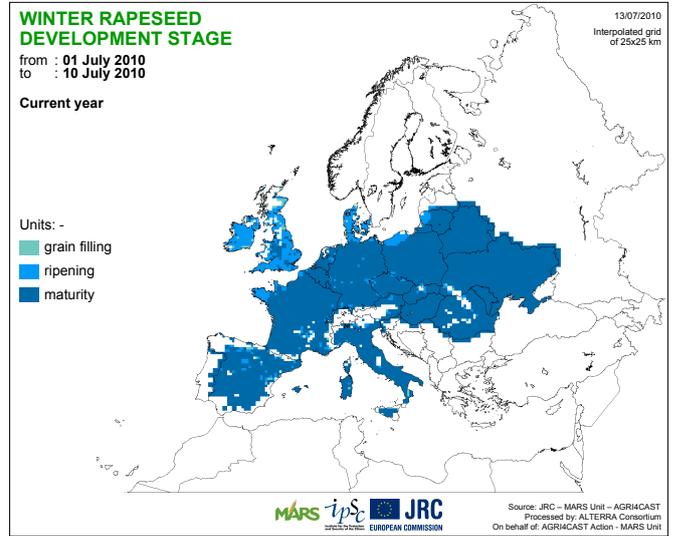
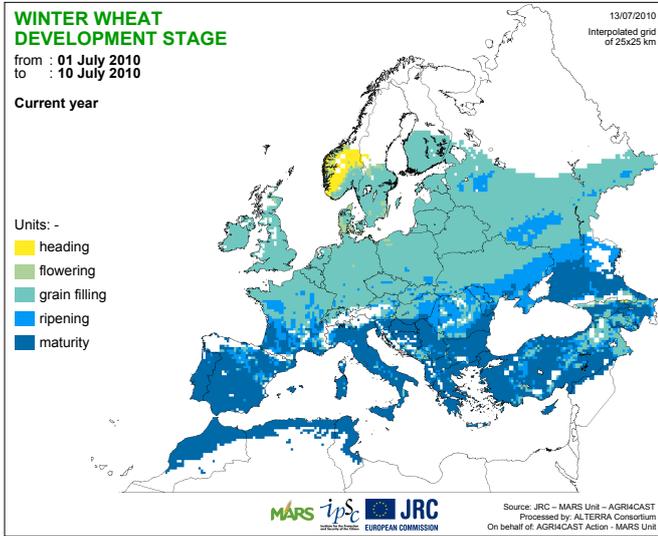
in the cereal region of Jendouba in Tunisia, for example). The relative soil moisture was particularly good at the end of the crop year and the crop development stage was favourable in many regions. The yield estimates have been revised slightly upwards. In Tunisia, wheat yield is forecast at 1.7 t/ha (-20.3% compared to 2009 and +4.1% to LTA) and barley at 1.2 t/ha (-36.3% and -12.2%). In Algeria, wheat is estimated at 1.4 t/ha (-2.8% compared to LTA) and barley at 1.2 t/ha (-15.7%).

4. Map analysis

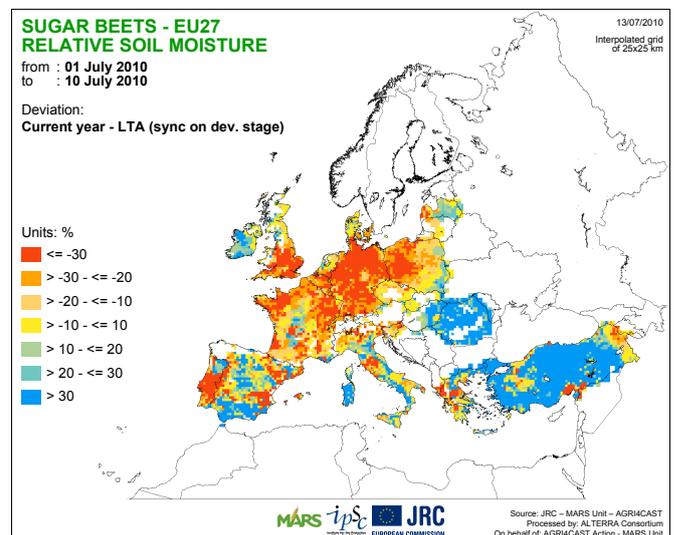
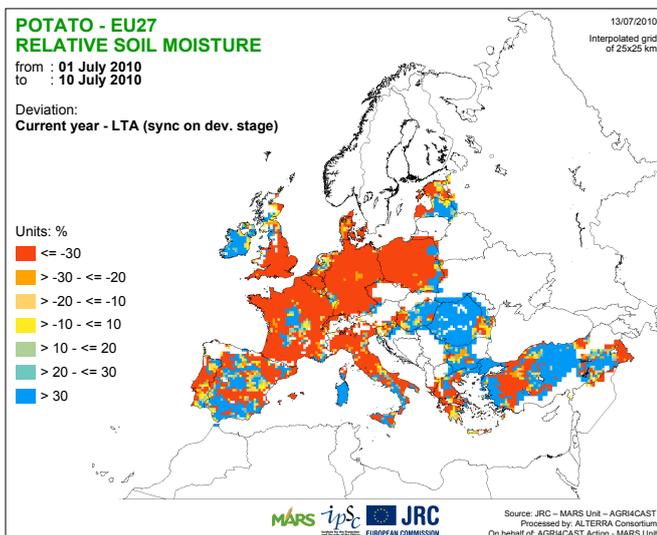
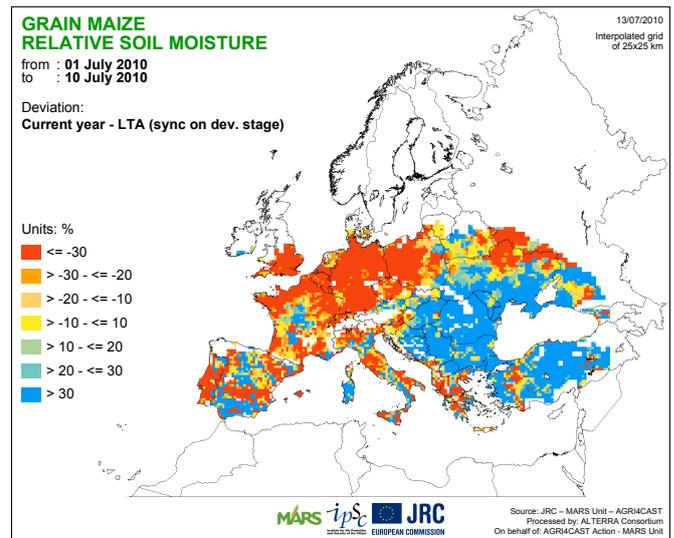
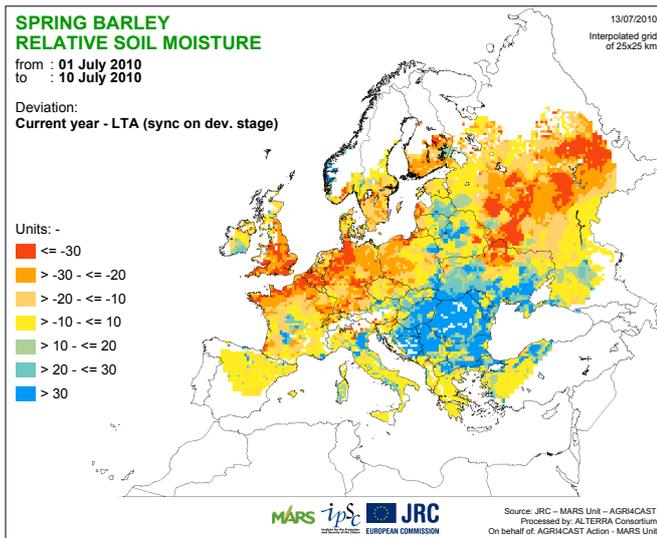
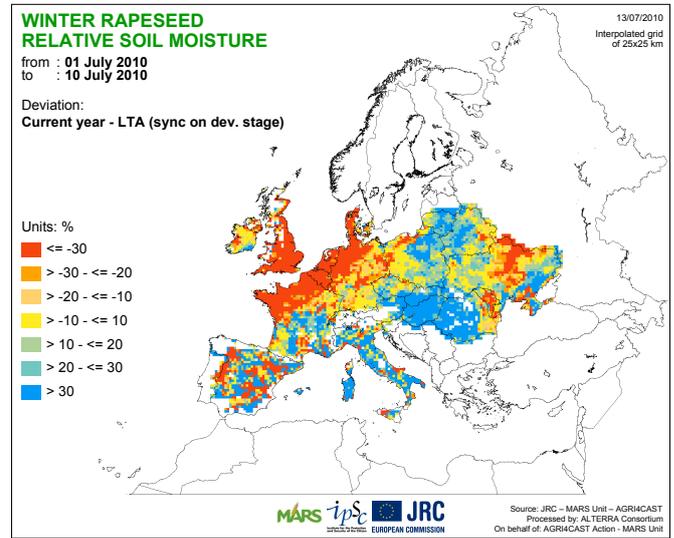
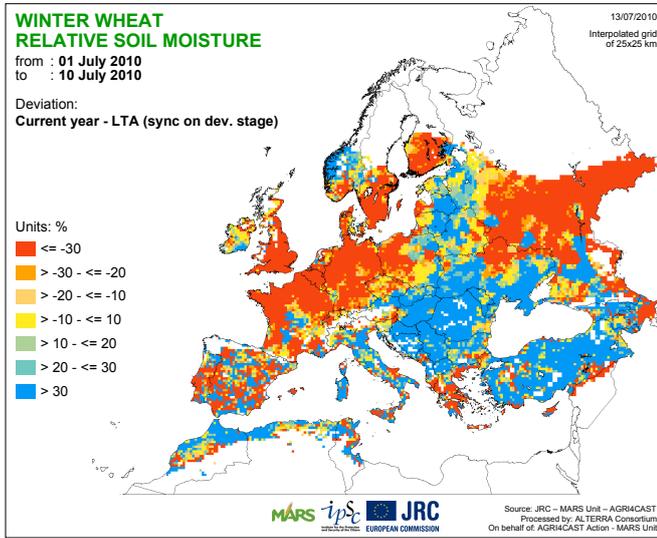
4.1. Temperature and precipitation



4.2. Crop development stage

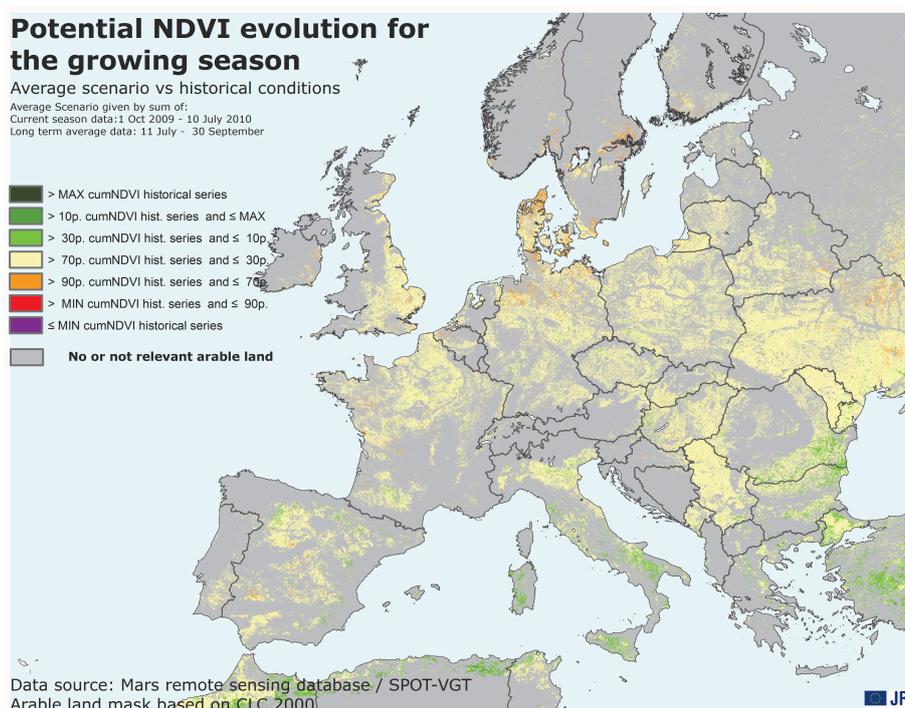


4.3. Relative soil moisture



4. Satellite analysis: SPOT Vegetation

Normal to slightly below average potential NDVI across Europe. Good canopy development forecast in western Black Sea area. Poor conditions in Russia.



The picture above displays the global biomass accumulation up to the end of the growing season and, therefore, evaluates whether the current season is closer to normal values or to an extreme event. The cumulated NDVI values for the end of the season were computed using the NDVI values observed from 1 October 2009 to 10 July 2010, and adding historical average NDVI values from 11 July to 30 September. The NDVI cumulated values obtained were compared with the three historical series (minimum, maximum and average).

The scenario shows an average year across the **Iberian Peninsula**, mainly driven by a normal development of the spring crops biomass. If the dry conditions of recent days continue, there is the possibility of a decrease in biomass growth in the south-west peninsula region. In northern Italy the NDVI signal was severely reduced by rainy conditions in May and at the beginning of June. The wet conditions probably slowed down the growth of spring crops. From mid June, thanks to the above-average temperatures, vegetation growth was given a boost, and the forecast was for a normal to slightly good development, assuming that conditions remain normal.

In **France** there is the likelihood of a seasonal canopy developing around the country. The delayed development stages of the end of May are still present and NDVI profiles show normal NDVI values. In north-western regions crop development is likely to be affected by the current dry conditions.

A similar scenario can be seen in **Benelux and United Kingdom**. Here, in spite of the lack of rain and a recent water shortage, the NDVI still exhibits values which are at, or even slightly above, the normal value. The high radiation values

are probably triggering the development of vegetation in new crops.

Germany is faced with a dilemma. The eastern part has NDVI values that are slightly delayed, but values above the average will probably continue due to the lasting high temperature values in June. NDVI cumulated values have not been as good in the north-western part. Water scarcity has affected the growth of new crops and, even assuming normal conditions, the seasonal cumulated biomass values are highly likely to remain below the average.

In **central Europe** the current NDVI values range around the average and, if no prolonged negative event occurs, canopy development will be around the normal.

In **Poland**, NDVI values are slightly higher than the historical values. The NDVI profile of Wielkopolskie reflects the described trend. Development of vegetation in western Black Sea countries is very good. Favourable climatic conditions during the season produced NDVI cumulated values well above the average. Even if NDVI values fall between now and the end of the season, the cumulated values will in any event be show a slightly above average performance.

In **Ukraine**, NDVI cumulated values are similar to or slightly below the average. The high temperature in northern areas partially impaired crop growth, while rain in southern regions reduced the NDVI signal.

Very bad conditions in **Russia**: the range of NDVI values is well below the average in the main agricultural provinces. Only extremely good conditions from now on could result in an average biomass accumulation for the current season.